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DIAGNOSIS OF CHRONIC VALVULAR DISEASE *

PAUL D. WHITE, M.D.

BOSTON

A long life of accurate and painstaking study of the symptoms and signs of heart disease correlated with a wealth of postmortem observations might entitle a man to discuss with assurance the subject of the diagnosis of chronic valvular disease. Our inexperience we must counteract so far as possible by the experience of others. A desire to arrive at a common understanding of the present-day diagnosis of chronic valvular disease is the reason for the discussion of this subject this evening.

In the recent years of concentration on the functional pathology of the circulation, there has been a tendency at times to neglect structural pathology. The one helps our understanding of the other, and it is wise now and then to pause and to take account of stock. As the result of this marked advance of knowledge in disordered cardiac function in the last ten to fifteen years there has been also an increase in our knowledge of the diagnosis of chronic valvular disease. It is not quite such a cut and dried subject as some believe.

I shall summarize the symptoms and signs of disease of each of the four heart valves in turn—mitral, tricuspid, aortic and pulmonary—taking up first the pathognomonic signs, if there are any, and then those that indicate but do not prove the presence of a definite valve lesion. So far as I know, there are no symptoms pathognomonic of an individual valve lesion. It is only when heart failure begins or when a cardiac infection is in progress that special symptoms begin to develop. Mackenzie says:

> Generally speaking, the symptoms of heart failure show little that is distinctive of the particular valves affected. In the aortic cases, the reflex sensory phenomena are more prominent, and the ashen color of the face is sometimes characteristic. Where there is a mitral lesion, the pulmonary symptoms are usually more prominent, and the face may be ruddy with a dark tinge [cyanotic flush]. Apart from such differences, there is a great similarity in the symptoms of heart failure produced by all kinds of lesions.

MITRAL LESIONS

Mitral valve damage is proved by the presence at the apex of a diastolic murmur, with or without a thrill, which begins a brief interval after the second heart sound in the absence of an early diastolic murmur heard along the left border of the sternum. There may or may not be a presystolic crescendo murmur at the end of it. This is the only positive evidence of mitral valve lesion that I believe we possess. There are many signs that indicate the probability of mitral lesions but do not prove them. A very loud blowing or rough systolic murmur masking the first sound, heard best at the apex and transmitted well to the axilla and perhaps to the back, is good evidence of mitral damage with regurgitation, particularly if there is also a systolic thrill palpable at the apex. With a rheumatic history and some enlargement of the heart, such a murmur is practically pathognomonic of mitral damage with regurgitation. If there is much cardiac enlargement, as in cardiorenal disease, such a murmur may result from functional regurgitation, though there is less likelihood of a thrill or of as much intensity of the murmur as goes with a valve lesion. At times this organic regurgitant murmur is present with the diastolic murmur of mitral stenosis. Roentgenologic evidence of a heart enlarged transversely, with prominence in the region of the left auricle, is also good evidence of mitral valve disease. The electrocardiographic finding of pronounced right ventricular preponderance with prominent auricular complexes (P waves) in Lead II is excellent evidence of mitral damage. Both of these findings come with advanced mitral stenosis, as a rule, and are corroborative evidence, the apical diastolic murmur proving the condition. Marked accentuation of the second sound at the second left interspace near the sternum (P_2++) usually occurs in chronic mitral disease. Auricular fibrillation existing in a young adult—under the age of 40 years—almost always means rheumatic heart disease with mitral involvement—usually stenosis. There is, as a matter of fact, rarely organic mitral regurgitation without some stenosis, and also rarely mitral stenosis without some regurgitation. It is better to speak generally of mitral involvement, the high grades of which always mean mitral stenosis.

Other signs that suggest the possibility of mitral disease are the sharp first sound at apex, with or without a very brief thrill in a heart not beating violently. This short, so-called presystolic murmur and thrill may be found in nervous, overactive hearts as well as in mitral stenosis. A reduplication of the first sound at the apex, and a prominence of the third heart sound should also cause one to search for mitral stenosis, these findings and the sharpness of the apical first sound indicating the need of trying exercise (or amyl nitrite inhalation) to increase the speed and force of

* Read before the Association of Cardiac Clinics, New York Academy of Medicine, Jan. 26, 1921.

the heart to bring out the mitral diastolic murmur, especially with its presystolic accentuation, in early or slight grades of mitral stenosis. Recently a loud third heart sound close to the sternum in the fourth space has attracted my attention, the mitral diastolic murmur being found at the apex immediately following the third heart sound in several such cases. A pronounced presystolic murmur alone without the mid-diastolic murmur I have rarely heard, and unless the presystolic murmur is quite definite it should not, I think, be intrepreted as meaning mitral stenosis Moreover, it should be remembered that when auricular fibrillation sets in, the auricles cease coordinate action, so that the presystolic phase of the diastolic murmur of mitral stenosis disappears, leaving the tell-tale mid-diastolic murmur behind it. Since auricular fibrillation is a very common condition, especially in hearts with mitral stenosis, this is a very important point to remember.[1] It shows the greater need of relying on the diastolic rather than on the presystolic murmur in the diagnosis of mitral stenosis. However, Mackenzie said, "In the very early stages—some years before the appearance of a murmur—I have detected a slight presystolic thrill. The first murmur to appear precedes or runs up to, and seems to terminate in the first sound, and is audible over a small area around the apex." I believe that it is unsafe for the average physician to interpret such a slight "presystolic" thrill as probable early mitral stenosis. I should not dare to do it myself. I should like expressions of opinion on this point concerning presystolic murmurs and thrills in the absence of the diastolic murmur of mitral stenosis.

The diastolic murmur of which I have spoken so much is of a characteristic type. As I said, it begins at an appreciable interval after the second sound and is often diminuendo in character—low pitched and rumbling if the heart rate is slow. It is best heard in my experience with the patient recumbent and by the use of the bell stethoscope. The murmur is very localized at or just inside the maximal apex impulse. It is accentuated by exercise. With well marked aortic regurgitation the apical diastolic murmur, with or without presystolic accentuation, may mean simply the functional mitral stenosis described by Austin Flint. How often this difficulty may arise I do not know. I believe that the finding of aortic regurgitation with a mitral diastolic murmur in a rheumatic heart should generally be considered as a combination of aortic regurgitation and organic mitral stenosis, in a syphilitic heart as aortic regurgitation and functional mitral stenosis. Thayer, in 1901, reported a mitral diastolic murmur in forty-five out of seventy-four cases of aortic regurgitation which came to necropsy at the Johns Hopkins Hospital. There was stenosis or other abnormality of the mitral valve in twenty-eight of these seventy-four cases, so that by subtracting this number from the total figures we have a probable ratio of 17:46, or about half or less of the pure aortic regurgitation cases exhibiting a functional stenosis. In several recent cases of marked aortic regurgitation —syphilitic in origin—I have failed to find the Austin Flint murmur. I should like very much an expression of opinion on this point.

Other conditions suggesting the possibility of mitral valve damage are the history of rheumatic fever, especially if repeated attacks have occurred, cerebral embolism (from left auricular thrombosis) in a young person, generally of the female sex, hemoptysis in a young person without tuberculosis, left recurrent laryngeal nerve paralysis, and the mitral facies with pulmonary congestion in various stages of heart failure. The pulse is often stated to be small and the systolic pressure low in mitral stenosis; this is not infrequently so in cases of auricular fibrillation, but it is certainly not always the case.

TRICUSPID LESIONS

Damage to the tricuspid valve is relatively rare, and is usually difficult to diagnose. The frequency of functional tricuspid regurgitation is great as compared with organic changes in the valve to produce regurgitation or stenosis. Marked tricuspid stenosis should be represented by a mid-diastolic murmur with or without a presystolic phase and localized over the lower half of the sternum or just to the left, but care must be taken that this is not a widely heard mitral diastolic murmur; also it must not be confused with the early diastolic murmur of aortic regurgitation which is heard in the same place and also higher. Mackenzie states that he has heard the tricuspid presystolic murmur only three times. Possibly this is because most cases are likely to have auricular fibrillation associated. Tricuspid stenosis is found in advanced rheumatic heart disease almost always with mitral stenosis. Osler and Gibson state that in a group of 173 cases of tricuspid stenosis, this lesion occurred alone in only twelve; it was associated with a mitral lesion in ninety-seven, with mitral and aortic lesions in fifty-eight, with mitral and pulmonary in three, and with pulmonary stenosis in three.

There are other helpful signs of organic tricuspid disease. A large liver may be present, although Osler and Gibson say that it is not always enlarged with tricuspid stenosis. Mackenzie looked "upon pulsation of the liver with a marked wave due to the auricle as an evidence of possible tricuspid stenosis." But, of course, the auricles may fibrillate and so the auricular wave may disappear. Levine tells me that he has recently seen three cases of tricuspid stenosis proved at necropsy, two of them diagnosed antemortem, all with auricular fibrillation and mitral stenosis associated. One of the striking features of these cases was the enlarged nonpulsating liver when there was no evidence either of cardiac failure or of alcoholic cirrhosis.

Cyanosis, marked in some cases and with a jaundiced tinge to the skin, polycythemia (even to 8 or 9 million red cells per cubic millimeter), clubbed fingers, dilated cervical veins, increased dulness to percussion to the right of the sternum, particularly in the third and fourth interspaces, and a rather high abnormal prominence of the right auricular shadow by roentgen ray all support the diagnosis of tricuspid valve disease. There has to be a fairly marked stenosis to

1. Gerhardt (Herzklappenfehler, Vienna and Leipzig, 1913) and others claim that an important factor in the production of the presystolic murmur of mitral stenosis is the increasing stenosis in each heart cycle when ventricular systole begins just preceding the actual closure of the mitral valve and the first sound of the heart. If the rate is rapid so that there is still a good sized stream of blood entering the left ventricle from the left auricle when the ventricle begins to contract, the increasing narrowness of the stiffened mitral valve may conceivably contribute largely to the crescendo quality of the presystolic murmur. This particular crescendo quality may not be produced by the auricular contraction, although the general accentuation of the diastolic murmur in presystole is so accounted for. The reported finding of occasional crescendo accentuation of the diastolic murmur just preceding the first sound in auricular fibrillation when the diastolic interval is short may be explained as outlined above, but certainly the chief cause for the presystolic (though perhaps not crescendo) accentuation of the mitral diastolic murmur is auricular contraction.

bring out some of these findings, but it is said that a superficial, high pitched, long, rough systolic murmur maximal over the sternum at about the level of the fourth space and to the left rather than to the right, accompanied by a thrill, means organic tricuspid regurgitation. The heart is enlarged transversely in tricuspid disease. Electrocardiograms have shown right ventricular preponderance, partly at least because mitral stenosis is almost always associated. Also in the absence of aricular fibrillation, the auricular complex (P wave) should be increased in size. The venous blood pressure should be increased. Except for the frequency of auricular fibrillation the arterial pulse is, I believe, not normal.

AORTIC LESIONS

The aortic valve may be the only valve damaged, as in syphilis, or it may be often associated with mitral lesions, as in the rheumatic heart. Regurgitation and stenosis are much less grades of one disease process than is the case with the mitral valve; aortic regurgitation may occur with practically no stenosis, although stenosis is rare without some regurgitation. Aortic regurgitation is about ten times more common than aortic stenosis.

A diastolic murmur beginning early and best heard down the left border of the sternum, associated with the waterhammer pulse, is pathognomonic of aortic regurgitation. This murmur may also be heard along the left border of the heart and at the apex, but it should not be confused with the mitral diastolic at the apex, which is later in time and more rumbling in character. Whether or not the cusp or cusps involved have anything to do with the variable transmission of the murmur I do not know. A musical diastolic murmur suddenly appearing after trauma or exertion usually means a valve rupture.

The marked waterhammer quality of the pulse described by Corrigan is also pathognomonic of aortic regurgitation, although a full pulse and capillary pulsation may be found in other conditions as well. Various phenomena, such as the pistol shot, the to-and-fro murmur on pressure over the great vessels (Duroziez' sign) and the visible pulsation or throbbing of the arteries of the head and extremities are dependent on the markedly increased pulse pressure due chiefly to the very low diastolic blood pressure. This wide pulse pressure with very low diastolic reading is pathognomonic of aortic regurgitation. The symptoms of ringing in the ears and vertigo sometimes complained of by aortic patients probably have their origin in the waterhammer type of pulse. An interesting phenomenon observed by Hill and Rowlands in aortic regurgitation is the much higher systolic pressure found in the femoral artery than in the brachial artery. A patient in the Massachusetts General Hospital with marked aortic regurgitation only the other day showed a brachial systolic blood pressure of from 132 to 136 mm. of mercury, and a femoral systolic blood pressure of 270 mm. The diastolic pressure was not clearly determinable in either artery, but apparently lay between 10 and 20 mm. This preponderance of femoral pressure is due, it is said, to an arterial tonus maintained to support properly the cerebral circulation in such cases.

Absence or weakness of the aortic second sound may be found in aortic regurgitation. The heart is always enlarged if there is much regurgitation, and it is in such a case with marked regurgitation that the largest heart (cor bovinum) is found. The apex impulse is often found in the sixth or seventh space and out close to the anterior axillary line. The roentgen ray disclosed a large heart increased in size downward and to the left, with a rounded apex. Increased excursion of the pulsation of the aortic arch is common in aortic regurgitation. The aortic shadow is increased in size if there is associated a syphilitic aortitis. In uncomplicated cases the electrocardiogram reveals marked left ventricular preponderance—the most marked that we observe. Krehl, however, has shown that a slight amount of aortic regurgitation may be present without any obvious enlargement of the heart.

Functional regurgitation through the aortic valve was described by Corrigan and has been spoken of since by others, but it is probably very rare. I have not observed it, to my knowledge. About this point I should like a further expression of opinion.

Confusion with pulmonary regurgitation should be avoided by failure to find signs of increased pulse pressure in pulmonary regurgitation. A diastolic murmur heard over the sternum has been recorded as of venous origin, and it has been encountered in exophthalmic goiter; but such cases should present but little difficulty. Recently in a case previously diagnosed by myself as slight aortic regurgitation because of the finding of an early diastolic murmur heard along the left border of the sternum, from the second intercostal space downward, the roentgen ray showed marked prominence in the region of the pulmonary artery, with marked pulsation in the region of the hilum of the right lung. The roentgenologic diagnosis of the condition was "probable patent ductus arteriosus," following Groedel. The electrocardiogram revealed marked preponderance of the right ventricle, certainly not supporting aortic regurgitation. The patient was a young woman, without a history of rheumatic fever, and in whom some cardiac symptoms had developed following influenza one year previously. There was no waterhammer quality to the pulse and no systolic murmur at the base of the heart. The diagnosis must rest in doubt, though pulmonary regurgitation of unknown cause would best explain all the signs.

Aortic stenosis may be definitely diagnosed on the discovery of a rough systolic murmur, with a systolic thrill over the aortic area to the right of the sternum in the second interspace and transmitted to the vessels of the neck in the absence of signs of an aneurysm. Stokes noted that this murmur may be audible at some distance from the chest wall. The pulse is anacrotic or plateau in type or both, a very important confirmatory finding. Also the bisferiens pulse has been recorded in aortic stenosis. The blood pressure is not remarkable, as a rule; if there is considerable regurgitation so that the stenotic effect is overbalanced, there may be an increased pulse pressure and absence of the anacrotic and plateau pulse characteristics. The heart is usually enlarged downward and to the left, as shown by palpation, percussion and the roentgen ray, but never to the degree found in uncomplicated aortic regurgitation. In aortic stenosis the aortic second sound is usually absent or much diminished. The electrocardiogram shows left ventricular preponderance. Mitral stenosis may be associated with aortic stenosis and thus may neutralize the left ventricular preponderance.

Slight degrees of aortic stenosis may be suspected when there is rheumatic heart disease with aortic regurgitation and a blowing systolic murmur at the aortic area transmitted to the neck, but without great loudness or a thrill. Aortic stenosis is frequently diagnosed, however, when it does not exist, hemic and other conditions being common causes of the systolic murmurs at the aortic area. Aneurysm and aortic dilatation may also be confused with aortic stenosis of slight to moderate degree. Pulmonary stenosis should not be confused because its systolic murmur, though also loud and accompanied by a thrill, is heard best to the left of the sternum and is not transmitted to the neck.

PULMONARY VALVE LESIONS

Chronic valvular disease involving the pulmonary valve is very rare. Endocarditis of the pulmonary valve is almost invariably associated with mitral, aortic or tricuspid lesions alone or combined. Pulmonary regurgitation may be suspected by the finding of a murmur beginning early in diastole with or immediately following the second sound and extending down the left border of the sternum in the absence of the waterhammer pulse; but the murmur of a slight degree of regurgitation through the pulmonary valve may be indistinguishable from that of slight aortic regurgitation, since the position and character of the murmurs are identical, and in view of the small amount of aortic regurgitation there may be no waterhammer character to the pulse. In such cases, roentgenographic and electrocardiographic evidence should be helpful in indicating which ventricle shows the greater hypertrophy. Organic pulmonary regurgitation may not be distinguishable from functional pulmonary regurgitation. The functional type occurs in cases of advanced mitral disease with much pulmonary engorgement, but it is conceivable that the organic regurgitation may also occur in such cases. The murmur of functional pulmonary regurgitation—due to the stretching of the pulmonary ring—is that described by Graham Steell. Its frequency is a matter of some discussion. It is said to appear and disappear with changes in the condition of the patient. It may be difficult to distinguish from slight functional aortic regurgitation. I feel very doubtful about calling a slight early diastolic murmur heard along the left border of the sternum a Graham Steell murmur. Graham Steell himself found the pulmonary regurgitant murmur rarely. Osler and Gibson say: "From the clinical standpoint, so much that has been said about pulmonary regurgitation is either unproved or as yet incapable of proof that the subject should be approached with the greatest caution. . . . Pulmonary regurgitation is more often diagnosed than existent. In several cases in which we thought it to be present in young persons the lesion proved to be aortic." I should like an expression of opinion on this point.

Pulmonary stenosis is a fairly common congenital heart abnormality, but as the result of disease after birth is exceedingly rare. I have seen it only in congenital hearts. A loud systolic murmur in the second interspace just to the left of the sternum with a systolic thrill and not transmitted to the vessels of the neck is pathognomonic of pulmonary stenosis in the absence of signs of an aneurysm. Two types of congenital stenosis are described: that occurring low and involving the infundibulum of the right ventricle, and that involving the valve itself. The former variety is said to show the maximal murmur and thrill in the third left interspace, and the latter in the second left space. With any pronounced degree of stenosis there is considerable cyanosis, though other congenital abnormalities, such as patency of the ductus arteriosus or an interventricular foramen so commonly found with pulmonary stenosis, tend to decrease the degree of cyanosis. Polycythemia and clubbing of the fingers may occur. Enlargement of the heart to the left with the apex tilted up is shown by the roentgen ray. Vaquez and Bordet call this the "wooden shoe" (sabot) shape. Also the roentgen ray shows prominence in the region of the pulmonary artery. The electrocardiogram indicates right ventricular preponderance, and it is in these cases of congenital pulmonary stenosis that I have found the highest grades of right ventricular preponderance. Stenosis of the pulmonary valve acquired after birth should be distinguishable from the congenital type by the history of the case and by the evidence of other endocarditic lesions.

COMBINED VALVE LESIONS

Finally, a few words should be said about combined valve lesions. The combination of valve lesions presents a combination or a neutralization of the signs of the individual valve changes. For example, stenosis of the aortic valve cuts down and may completely neutralize the Corrigan pulse of aortic regurgitation. Aortic regurgitation will balance the right ventricular hypertrophy of mitral stenosis so that the whole heart may be symmetrically enlarged. The characteristic murmurs of both lesions will be present in such a heart—the early diastolic murmur of aortic regurgitation along the left border of the sternum and the later rumbling diastolic murmur of mitral stenosis at the apex. Sometimes an apparent difficulty may arise as to whether these murmurs represent the diastolic murmur of true mitral stenosis with the functional pulmonary regurgitant murmur of Graham Steell, or the diastolic murmur of aortic regurgitation with the functional mitral stenotic murmur of Austin Flint. Other data, such as the type of ventricular enlargement (left or right sided) determined by electrocardiogram and the roentgen ray, and the presence or absence of the Corrigan pulse or of pulmonary congestion, should clear up such doubts quickly. Probably in rheumatic heart disease these two diastolic murmurs most often mean both organic aortic regurgitation and organic mitral stenosis. More likelihood of error arises when one attempts to diagnose damage to three valves. Osler and Gibson write:

> As a rule the physician is in a safer position if he limits his diagnostic ambition to two valves. Clinically, when lesions of three or four valves are determined with accuracy, mortifying postmortem disclosures are not unlikely to follow.

Function of Public Health Nurse.—The primary function of the public health nurse is to rehabilitate families along health lines. No matter what her introduction to a home may be, whether it is a birth registration, the discovery of a physical defect in a school child, or a problem case reported from a hospital, her job in the home is the same—to get the family to do the healthy thing. This involves not only instruction but also assistance. It is necessary that the family should know what to do and want to do it, but it is also necessary, in many cases, that obstacles standing in the way should be removed. In the removal of these obstacles the public health nurse functions as a social worker.—R. E. Mills, *Hospital Social Service* **3**:57, 1921.

ETIOLOGY OF THE CARDIOVASCULAR AFFECTIONS *

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Diseases occur as the result of predisposing and exciting factors. To trace the predisposing factors of a disease with any degree of exclusiveness is a large problem. It leads to a consideration of racial tendency, hereditary familial qualities, health of the parent during the period of gestation, nutrition during infancy, and in later life, hygienic environment, social and economic status, and hereditary as well as acquired immunity to the infections.

The broader our point of view, the more we consider these predisposing factors in the evaluation of the patient to his disease. That the importance of this is appreciated is well shown in the activities of cardiac clinics in large medical centers of the country, especially in the city of New York.

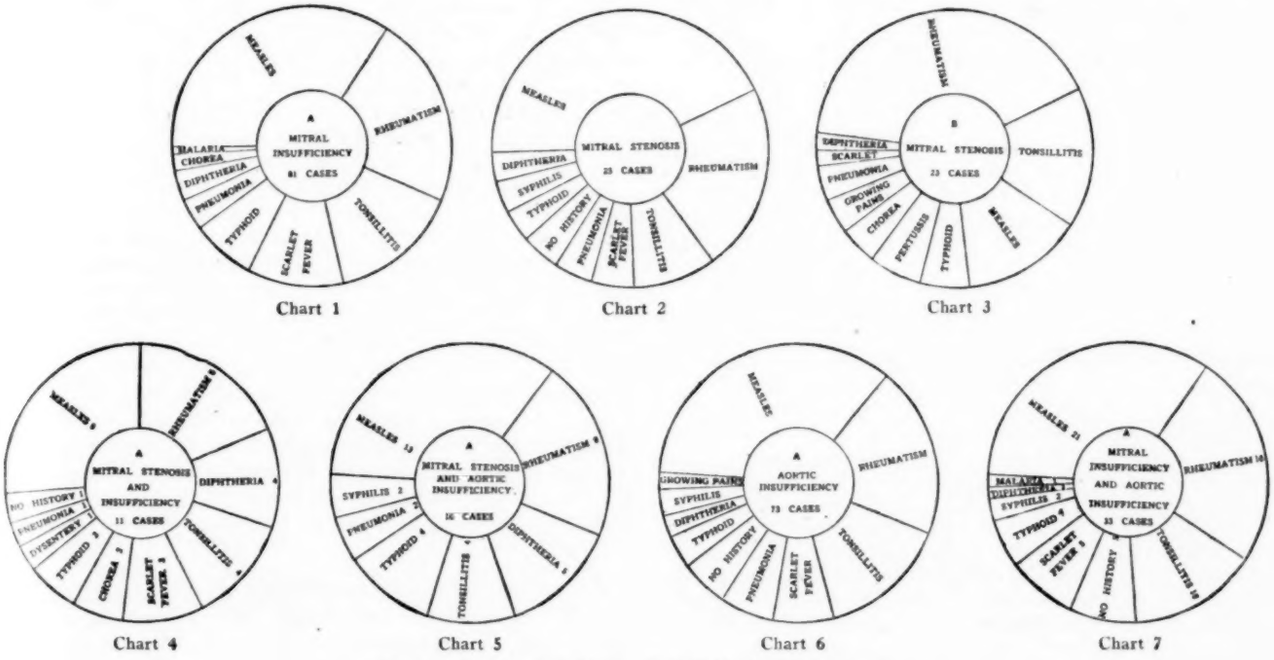
In eliciting the history of a cardiovascular case, the importance of predisposing factors occupies the mental background of the physician; while in the foreground he is considering the more obvious and palpable cause of the disease, the exciting factor. We need not stress the point as to whether the exciting or the predisposing factor is more potent in the production of cardiovascular disease; no doubt the two are equally active.

From the first day of postnatal life to the last one, our existence as healthy and living individuals is constantly endangered by bacterial poisoning. The early conflicts of the human organism with pathogenic bacteria are usually more or less violent. If one studies the life history of the infant from the day of its birth, he will note that the early sick-spells, such as tonsillitis, come on with great disturbance. There is high fever, rapid pulse, rapid respiration, nausea, vomiting, etc.

We say that infants develop fever readily, and that a high temperature in childhood means less than when it occurs in adult life. What we should say is that an infant unused to the pathogenic bacteria of our earthly habitation is shaken violently during its early conflicts with bacterial invasion. The battleground for many of these struggles in the lives of children is in the pharynx and within the tonsils. This danger field is the vestibule of the respiratory and gastro-intestinal tract.

In the present analysis of 476 cardiovascular cases, after rheumatic fever, tonsillitis occurred more frequently than any other infection.

It is generally agreed that aside from certain predisposing factors, the important cause of cardiovascular disease is to be found in the infections. Osler says that endocarditis occurs with rheumatic fever, tonsillitis, scarlet fever, pneumonia, chorea and rarely in measles and varioloid, and that acute myocarditis occurs in diphtheria and typhoid. The causes of acute myocarditis degenerations are given [1] as diphtheria, typhus, typhoid; also rheumatic fever, scarlatina, variola and influenza. Chronic myocardial degenerations are said to be produced by valvular lesions and the chronic infections.



Charts 1-7.—Previous history in individual valvular types.

It would be of no advantage to quote other recognized authorities, as the subject is generally presented in a similar way. My criticism is that such statements are too general and that a more detailed consideration of the preceding history of cardiovascular patients is of the utmost importance.

The classification that I present is based on the disease manifestations as we meet them in our consulting rooms and at the bedside. The present analysis is based on 476 cases. In this series a special effort was made to investigate the antecedent disease history. Only well substantiated statements were accepted as to the nature of the disease recorded. "Rheumatism" includes only the well marked cases of rheumatic fever and multiple arthritis with fever which confined patients to their bed for a variable time. "Growing pains" designated sub-

* Read before the Association of Cardiac Clinics, New York Academy of Medicine, Jan. 26, 1921.

1. Osler's System of Medicine, **4**.

acute arthritis or myositis of childhood, in most cases continuing for some time. "Previous disease" included measles; chickenpox; scarlet fever; diphtheria; pertussis; chorea; rhinitis; pharyngitis; tonsillitis; quinsy; growing pains; rheumatic fever; typhoid fever; influenza; pneumonia, R. L.; syphilis and other diseases.

The history having been obtained, these patients were examined, and the points in the diagnosis determined, thus:

Cardiovascular Examination.—Cardiac measurements: Right border apex, left border; total measurement.

Apex impulse: Space; thrill.

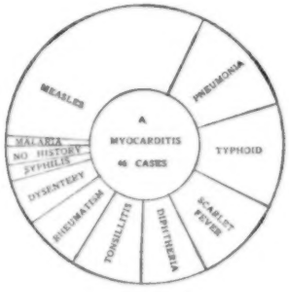


Chart 8

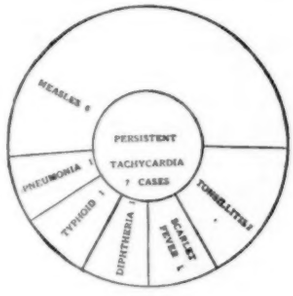


Chart 13

Chart 14

Charts 13 and 14.—Previous history in special types.

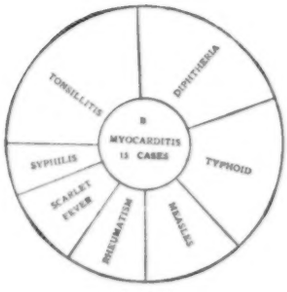


Chart 9

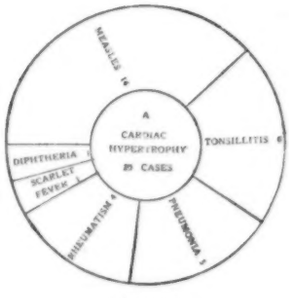


Chart 10

Recent tendencies have been toward considering all cases of aortic insufficiency under great suspicion of being syphilitic. While this may be true after middle life, it is not generally the case in children and young adults. Intimate observation in many cases in which the family history as well as the patient's history is known to me personally leads me to that belief. In congenital heart disease, syphilis probably is an important factor. Syphilis engrafted on a cardiovascular system already injured by rheumatic fever is ruinous.

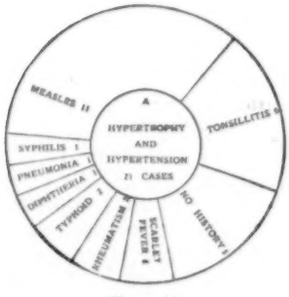


Chart 11

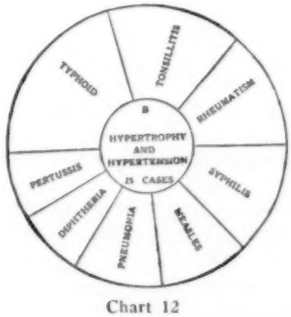


Chart 12

Charts 8-12.—Previous history in individual myocardial types.

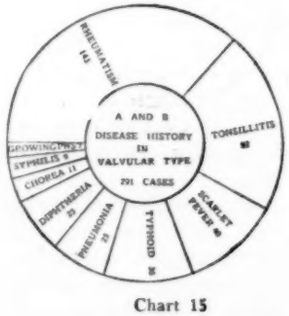


Chart 15

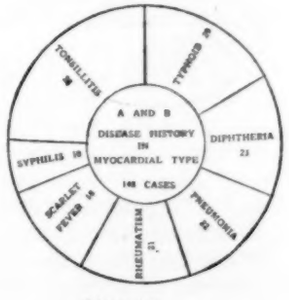


Chart 16

Charts 15 and 16.—Previous history in the two groups.

Sounds: Aortic; pulmonic; apex.

Murmurs: Aortic; pulmonic; apex; organic, functional, arrhythmias. Pallor. Cyanosis.

Exercise test: Pulse erect; horizontal; horizontal after exercise (100 X); 2 minutes later; dyspnea immediately after exercise; 2 minutes later.

Blood pressure: Maximum, minimum, pulse rate; alternans. Other findings.

Diagnosis.

COMMENT

The measles of infancy and the measles of adult life affect the individual with different degrees of severity. Children may be very ill with measles but generally they make a comparatively prompt recovery. With adults this is not the case. An adult may be less ill during the actual course of the disease, but his recovery is more protracted. The circulatory disturbance as well as disturbances of the nervous system are very marked. Many adult patients show marked cardiovascular and vasomotor disturbances from which they recover slowly. Tachycardia, arrhythmia, cyanosis of the hands, cold sweats and poor response to effort are common sequelae.

In 500 cases of typhoid fever that I studied in 1904, I encountered endocarditis only once: typhoid bacilli were recovered in the blood stream. This leads me to believe that when a patient dates his endocarditis from an attack of typhoid, his disease probably was not typhoid, but a blood stream infection of another type.

When the diagnosis of mitral stenosis and aortic insufficientcy was recorded, a special effort was made not to confuse Flint's murmur with the lesion of a true mitral stenosis.

There is much that is unknown about the streptococcus family. The streptococcus is found in measles, in scarlet fever and in pneumonia, and extended observations show that endocarditis is not a direct complication in these diseases. It is found in tonsillitis, in chorea and in rheumatic fever, and these diseases, as we know, show the greatest tendency to endocardial involvement. Many theories have been proposed, but proof is not yet available. Even if an endocarditis or myocarditis is not in evidence at the time of some of these infections, it is easy to believe that a patient may harbor strep-

tococci for a long time thereafter, and suffer from a recurrence of their activity later on. While the evolution of some diseases is a matter of weeks, in others it is a matter of decades.

The variety of cases and their relative proportions in this series are shown in Table 1. Based on the percentage of usual disease incidence, this number of cases would occur in a population of 142,800 persons.

TABLE 1.—VARIETY AND RELATIVE PROPORTIONS OF CASES

	Number
Mitral insufficiency	99
Aortic insufficiency	80
Myocardial deficiency	61
Mitral stenosis	48
Hypertrophy and hypertension	46
Unclassified	37
Mitral and aortic insufficiency	35
Cardiac hypertrophy	27
Mitral stenosis and aortic insufficiency	18
Mitral stenosis and insufficiency	11
Persistent tachycardia	7
Goiter	7
Total	476

Table 2 gives the frequency with which endocarditis is diagnosed during and immediately after some of the acute infectious diseases. It should be recalled here that frequently a murmur may not be discovered until some time after a disease has run its course.

TABLE 2.—FREQUENCY WITH WHICH ENDOCARDITIS IS DIAGNOSED DURING AND IMMEDIATELY AFTER SOME ACUTE INFECTIOUS DISEASES*

	Endocarditis Cases		
	Number	Per Cent.	
Rheumatic fever	1,750	53.3	Cowan (N. & L.)
Chorea	829	31	Cowan (N. & L.)
Lobar pneumonia	558	0.72	Abrahams, Lancet, Sept. 11, 1920
Scarlet fever	1,770	0.22	Rosenbaum, A. I. M.
Typhoid fever	500	0.20	Barach, Internat. Clin. **3**, Series 19

* In 291 cases of endocarditis observed by the author, 35 per cent. gave a history of tonsillitis.

Considered as a whole from the clinical point of view, the present series as shown in Table 1 may be subdivided into two groups: (1) those belonging essentially to the valvular type of disease, and (2) those belonging to the myocardial type. This division is a

TABLE 3.—CLINICAL DIAGNOSES

Group 1. Valvular Type	
Mitral insufficiency	99
Aortic insufficiency	80
Mitral stenosis	48
Mitral and aortic insufficiency	35
Mitral stenosis and aortic insufficiency	18
Mitral stenosis and insufficiency	11
Group 2. Myocardial Group	
"Myocarditis"	61
Hypertrophy and hypertension	46
Cardiac hypertrophy	27
Persistent tachycardia	7
Goiter heart	7

purely clinical one, and it is fully realized that in the endocardial group many of the patients had myocardial involvement, and vice versa. Nevertheless, we must all admit that in our daily work the classification given in Table 3 is perfectly logical. Cases diagnosed as "myocarditis" were in reality cases of cardiac deficiency without evidences of valvular disease. The diagnosis was based on the size of the heart, poor response to effort, breathlessness, tachycardia, etc. Persistent tachycardia and goiter heart are classed with the latter group as a matter of convenience, and not because of their etiologic basis.

This brings us to the main point of this discussion, which I wish thus to summarize:

The heart patient whose clinical picture was that of a previous endocarditis gave a history of having had one or more of the following diseases: rheumatic fever, tonsillitis and scarlet fever.

The patient in whom a diagnosis of myocardial involvement was made gave a history of having had quite another group of diseases. In order of frequency they were: tonsillitis, typhoid fever, diphtheria, pneumonia and rheumatism.

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THE EQUIVALENT OF ORDINARY EXERTION*

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At the meeting of the Association of Cardiac Clinics in 1917, this classification of patients in the cardiac clinics was adopted:

CLASS 1.—Patients with organic heart disease who have never had symptoms of cardiac insufficiency under ordinary conditions of activity.

CLASS 2.—Patients with organic heart disease who have had such symptoms previously, but who do not have them at present under ordinary conditions of activity.

CLASS 3.—Patients with organic heart disease who at the time of observation have symptoms of cardiac insufficiency following ordinary exertion.

CLASS 4.—Patients with possible heart disease. Patients who have abnormal physical signs in the heart, but in whom the general picture or the character of the physical sign leads us to believe that it does not originate from cardiac disease.

CLASS 5.—Patients with potential heart disease. Patients who do not have any suggestion of cardiac disease, but who are suffering from any infectious condition which may be accompanied by such disease; or who have suffered from such diseases; e. g., rheumatic fever, tonsillitis, chorea, syphilis.

This classification is based on a functional diagnosis of the cardiac condition, that is, on the presence or absence of symptoms of cardiac insufficiency (dyspnea, fatigue), following ordinary exertion, without any further definition of the trem. What is "ordinary exertion"? In children, is it walking on the level, or running, or jumping rope? In adults, is it the carrying on of one's daily occupation, and if so, what occupation, that of a stenographer, or a scrub-woman, or a longshoreman?

On inquiry, I find, as may well be expected, that individual clinics have made arbitrary and different interpretations or standards for the term "ordinary exertion." For this reason, one of the prime aims of the classification—standardization of cardiac diagnosis—is lost.

The practical need of a definition, or an equivalent for "ordinary exertion," has been felt by those of us who have charge of the special cardiac classes in the public schools, as a correct classification of the child is necessary for purposes of adequate care and study. When any term is open to varied interpretation, is it

* Read before the Association of Cardiac Clinics, New York Academy of Medicine, Jan. 26, 1921.

not desirable and advisable to change it? Would not the term "exercise tolerance for ——," stating definitely the type of exercise, be more accurate? It will then be an easy matter to adopt some standard exercise, or state definitely the character of the work performed within a given time.

In estimating the exercise tolerance for any type of exercise in cardiacs, it is absolutely essential to know the reaction of the normal individual to that particular type of exercise. Therefore, a working table of standard test exercises of normal groups is necessary, and, to this end, the accompanying tentative working table has been formulated. This table was standardized according to age, weight and height from observations made on a normal group of children from 6 to 14 years of age. It consists of standard test exercises which are followed by normal circulatory reactions and are not associated with clinical symptoms of dyspnea and fatigue. The degree of distress and type

STANDARDIZED TEST EXERCISES

Test Exercises	Age in Years for Standard Weight and Height	Normal Range: Simple or Mild — No. of D.-B.	Simple or Mild — Weight, Lbs.	Simple or Mild — Swings, Times	Average — No. of D.-B.	Average — Weight, Lbs.	Average — Swings, Times	Severe or Strenuous — No. of D.-B.	Severe or Strenuous — Weight, Lbs.	Severe or Strenuous — Swings, Times
Dumb-Bell Test:										
Swinging two iron dumb-bells from the floor to full stretch of arms overhead and back again between the legs at a constant rate of two seconds for each swing	6-8	2	3	10	2	3	20	2	3	30
		2	4	10	2	4	20	2	4	30
	8-12	2	4	10	2	4	20	2	4	30
		2	5	10	2	5	20	2	5	30
	12-15	2	5	10	2	5	20	2	5	30
		2	7	10	2	7	20	2	7	30
		2	10	10	2	10	20	2	20	30

Staircase Test:	Age, Yrs.	No. of Flights	Rise, Ft.	Time, Sec.	No. of Flights	Rise, Ft.	Time, Sec.	No. of Flights	Rise, Ft.	Time,
Stairs taken at a steady climb without rest	6-14	2	15	40	4	30	40	4	30	20

	Reaction of Average Normal Children Following Test Exercises: To the Mild Test Exercise	To the Average Test Exercise	To the Severe Test Exercise
Color of face (flushed)	.....	+	++
Degree of dyspnea	.....	+	++
Degree of fatigue	.....	.....	+
Rise of systolic blood pressure	10-15 mm.	20-30 mm.	30-40 mm.
Type of systolic curve	Normal	Normal	Normal

of systolic blood pressure curve following these standard test exercises may be used as a gage in estimating the exercise tolerance of children with heart disease.

The utility of such a working table was demonstrated in the results obtained in the study of the exercise tolerance of a cardiac group to these standard test exercises. A comparative study of these results with an analysis of the case histories of the group is interesting. While exercise tolerance tests show two thirds to have a normal exercise tolerance for these standard test exercises, an analysis of the case histories showed that, in 75 per cent., free play had been interdicted by the physician, and 90 per cent. had been excused from school exercises.

Pulmonary Atelectasis.—It is important to observe that in the clinical collapse of the lung in induced pneumothorax the lung is probably completely quiescent only for brief periods. With progressive absorption of the gas introduced the affected lung must indulge in more and more ample respiratory excursions, so that structural changes within it may be indefinitely postponed.—H. Sewell, *Am. Rev. Tubec.* **4**:814, 1921.

INJURIES OF THE FEET

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AND
F. C. WARNSHUIS, M.D.
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The injuries to the feet do not vary in type from injuries to other parts. We have observed a decided difference in the reaction of feet to various traumatisms. Unfortunately, little consideration is given to this important subject, perhaps because we expect every reaction to a certain type of trauma to be identical in similar tissues, no matter what the location or function. In industrial accidents a comparatively large percentage, about one fifth, of all injuries are to feet. There are very few activities of a laboring man that do not require some use of the feet, and because of inherent clumsiness they are particularly liable to injury. Any accident to the foot is a greater disability than to almost any other part of the body; for when the means of locomotion and support is interfered with, the worker stops, no matter what his vocation. It is quite necessary for us, in our professional and scientific activities, to pay particular regard to the economic situation and status of each individual or group. Though we usually look on foot injuries as of "minor importance," they actually deserve greater study. An effort to shorten periods of convalescence and to lessen disability preventing loss of time to employer and employee is an essential economic consideration.

We have observed that with all foot injuries the reaction to injury is different from what it is in other parts in that there results an unusually long period of disability quite out of proportion to the type or severity of traumatism. It is advisable to study the reasons for this variance and to apply our observations in treatment. It is our intention, not to take up each type of injury individually or to outline new procedures of treatment, but to take up a general consideration of certain points that must be understood and appreciated to develop an effective method of treatment.

CONDITION OF THE FOOT

Anatomically, the foot may be compared to the hand. There is considerable structural similarity, yet functionally there is little in common. The finer movements of the hand and fingers are developed, through our evolution and training, into elaborate members of precision, wonderfully coordinated with higher centers. We become progressively dexterous with hands and fingers, while the foot and toes undergo retrogressive changes. The feet are becoming simply supports. Functionally, therefore, we find the foot having little similarity to a structurally almost identical part. We understand that it is very necessary to have a thorough knowledge of anatomic structures for successful treatment of injuries, yet just as necessary is a thorough conception of normal function. Loss or delay of normal function causing disability may not always be the result of actual loss or derangement of anatomic structures; in fact, it is usual for some disability to exist after the anatomic relationships are apparently normal. Because of the very peculiar and individual function of the foot, we may expect and do find that the reaction to injury is unusual. Consider that the feet are in constant use and receive all of the shocks of locomotion, while bearing the body weight and being propelled by the largest muscles of the body. They are at right

angles to the body axis, and the leverage is at the approximate center of an arch. We encase feet in shoes, which act as splints to encourage disuse and atrophy. Necessarily there is accumulation of dust, grime and desquamated epithelium which, with natural or excessive moisture of the skin, keeps the part in a sodden and unwholesome condition that no doubt encourages bacterial growth. Constant pressure and friction produce formation of callus and continual erosion, with constant repair and derangement of anatomic relationships.

The location of the feet at the base of the body column with the action of gravity has a tendency to encourage fluid sedimentation. The veins are unable to cope with this situation, and the constant new supply from the arterial stream results in a certain greater amount of stasis than elsewhere. The venous system lacks the support and propulsion of muscle bodies having only bone, fascia tendon and fatty pads of no great elasticity to assist. All of these conditions enumerated produce a continuous sort of passive congestion in the feet which, in turn, causes low power of resistance and repair.

The bony arches, supported by tendon and fascia, are fortunately elastic; yet surprisingly moderate trauma may fracture or displace bone or injure the ligament and fascial supports. Especially is this true when some deformity already exists, and this state is the rule rather than the exception. The arches are so constructed that all structures are interdependent; an injury or derangement to one unit reacts adversely to others. We find at once a serious interference with function and disability in locomotion. The ankle joint does not enter into the structure of the arches, but is a sort of hinge and supports the whole weight of the body, and acts in one plane of flexion and extension. Any disturbance of the ankle joint causes limitation of this hinge action, and new angles for the body support to which the foot must become accommodated. The phalanges are almost functionless, even atrophic. They do not enter into the real supporting arches and because of lack of fine coordination with the higher centers, and because of their location at the very extremity of the body, are unable to protect themselves when bearing the body weight.

NATURE OF TREATMENT

To overcome this natural anatomic handicap and to encourage nature to bring about theoretical normal conditions following injury, the foot must be relieved of the action of gravity in the circulation and the weight of the body. Our only means to this end and to hasten repair and normal return of function is to place the injured foot at complete rest. This not only includes various methods of splinting and bandaging but also should include rest in bed with elevation at once, and for even very minor injuries. It is difficult for the average patient to understand this necessity; but when fully explained that the convalescence will be materially shortened, his cooperation can be expected. We have observed that there is a prolonged period of swelling following every foot injury, and that this swelling is in itself a great disability. The cause of this we have attributed to the disturbance of an inadequate circulation; in other words, the part is "decompensated." By rest in elevation the normal state of passive congestion is prevented, and the circulation given the only support possible. We have found that hot bathing also encourages this passive congestion by relaxation of blood vessels and counterirritation; therefore we are learning to avoid heat, as it prolongs the disability unless properly given and the part at once elevated.

Roentgenograms should be made as a routine in the examination of every case with the remotest possibility of fracture or dislocation. The result of such practice is surprising in the number of bone injuries found when unsuspected. Simple contusions and sprains are now the exception; in fact, we question the entity of a "sprain." We recall many cases diagnosed and treated as contusions or sprains that proved to have a longer period of disability than was anticipated and which were overlooked bone injuries. Fractures of the tips of the phalanges, the shafts of the metatarsals and phalanges, or of the tip of the fibular malleolus are common and not easily diagnosed except by roentgenography, as frequently crepitus and deformity are absent. The tarsals are not easily injured, except by severe crushing injuries or falls on the feet from heights, as they are well protected by their elastic arches. However, when tarsals are injured by fractures or dislocation, there is considerable derangement of neighboring structures, and deformity results. Fractures about the ankle joint are not often overlooked, except the frequent fracture of the tip of the styloid of the fibula. This injury is usually caused by turning the ankle, and is due to tearing away of periosteum or bone by the external lateral ligament and is usually called a "sprain." In the Pott's fractures it must be remembered that there is always involvement of the subastragaloid joint, resulting in difficulty after bony union is firmly established.

In any fracture, especially when joints are involved, we find it advisable to begin early passive motion as soon as the pain will permit. Swelling should in no way interfere. By early passive motion it is possible to prevent a great amount of limitation of motion and to cut down a protracted period during which the patient is otherwise actively endeavoring to obtain normal function. Considerable of the delayed function and disability of a splinted part is due to disuse and atrophy of muscle. This fact is often overlooked, and the limitation is considered only in the light of the injured bone. Passive motion with massage keeps muscle tone about normal so that when active motion is required the parts can react without difficulty.

The treatment of infections in no way differs from the treatment in other locations. Every wound of the foot should be looked on as infected. We must remember the exceptionally low resistance of the fatty pads, fascia and tendons along which infection travels, and the interosseous spaces that may be the site of abscess formation. Puncture wounds, especially, carry infection into these deeper layers of tissue. Infection and the extension of infection are preventable. Surgical cleansing of wounds means not only the usual generous use of so-called germicides or antiseptics but includes the removal of all foreign material, tissue débris and devitalized tissue, with the institution of proper drainage. Drainage may not be necessary, but it is well to err on the side of drainage rather than to take a chance and fail. There is a usual tendency to leave drainage material in situ longer than is necessary. Once drainage is complete and a sinus established there is no necessity further to traumatize tissue with introduction of foreign material. Before or when infection is established, the part must be at rest in bed and elevated. We must not wait for signs and symptoms that

cause the patient, of his own accord for his own comfort and to protect himself, to institute this measure.

When making incisions in the foot for whatever purpose, one must have a wholesome respect for normal structure and avoid needless destruction when removing tissue. For conditions existing under the fascia, a lateral incision at the level of the fascia plane or even through the interosseous spaces on the dorsum is best. A very unfortunate result of lacerations or incisions is the formation of troublesome scars. Scars on the plantar surface are a continual discomfort and decided disability. The friction of the shoe causes callus to form along the line of scar which results in great pain and difficulty in walking, and the condition cannot be corrected. No incision should be made on the plantar surface. On the dorsum, lacerations over tendons may become adherent at the distal ends of the metatarsals and cause contractures, pulling the toes upward in extension. This may be avoided by proper selection of site for incisions, and carefully suturing underlying tissues when lacerated, and by early motion of injured tendons.

Often there is injury involving the toe-nail. We consider the nail as a source of infection and as a foreign body. Its early removal is advisable, and there is no inconvenience from its loss. Usually there is regeneration from the matrix and, even should there be none, no disability results. A hematoma under the toe-nail lifts the nail so that the removal is simply and easily done. The finger-nail usually regenerates by new growth under the injured nail and without its immediate loss; but we find that the toe-nail separates early and "in toto" because of poor circulation. The underlying tissue is soon covered by a hard protective shell before the development of a real nail.

With simple contusions of the feet we always expect short disability and are always disappointed. There is more involvement than is appreciated. Fractures are not an uncommon accompaniment of apparently simple contusions. Even if fracture is not present there is injury to periosteum, tendon sheaths, or a hematoma formed in the fatty pads or about the joints. Hematomas are slow to absorb and interfere with the functioning of the joints or interosseus muscles. Perhaps hot bathing may hasten this absorption when properly instituted.

IMPORTANT POINTS

One might continue at length to cite numerous case histories illustrative of the extent and character of foot injuries that we have been accustomed to classify as minor but which have produced great disability with some degree of permanence. It is our purpose here, not to develop an exhaustive treatise but to stimulate a better plan of treatment of foot injuries based on a better conception of physiologic functioning and reaction. We therefore draw attention to certain facts:

1. The structure of the foot is complex, and there is a difference in the reaction of the tissues.
2. Injury to an integral part has a large incapacitating influence on the whole member and the individual.
3. The integral part affected must be accurately determined, and roentgenograms made a routine procedure in examination.
4. The site of injury should not be treated exclusively. The whole part and its anatomic and physiologic relationship should be considered.
5. Rest in elevation should be instituted at the beginning of treatment.
6. Improper hot bathing is more productive of harm than of benefit.
7. We are always dealing with infected areas.
8. Incisions should be made at sites of election, never on plantar surfaces, and all wounds must be carefully debrided and coapted.
9. Anatomically correct adjustment of footwear merits greater attention and frequently accomplishes the complete eradication of the final results of traumatism.

RESISTANCE TO TUBERCULOSIS

A NONIMMUNOLOGIC CHEMICAL FACTOR WORTHY OF CONSIDERATION *

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In an effort to solve the intricate mechanism of resistance to tuberculosis, investigators have utilized the knowledge obtained from all the available fields of immunology and cellular pathology, but without entire satisfaction. There still seems to be something in resistance to tuberculosis which requires further elucidation. There are certain facts that will not entirely comform to our present explanation. Humoral antibodies do not seem to be significant in the resistance of the body to tuberculosis, since such agents as will readily influence antibodies in the economy of the experimental animal [1] have no visible effect on the progress or type of tuberculosis developing in these animals.[2] The same agents have, however, a profound effect on the acute experimental infections in which antibodies are so important.[3] A decade ago we were informed that the lymphocyte, related to the round cell of the tubercle, was the all important agent in the body combat against tuberculosis; and experimentally, the Rockefeller Institute investigators, Murphy [4] and Morton [5] recently led us to believe that they could markedly hasten tuberculosis in the mouse and guinea-pig by destroying the lymphocytes (leukocytes) of the body by using the roentgen ray. Other investigators,[6] however, have failed to corroborate these observations, and so the lymphocyte has outlived its day of importance except for sporadic reports appearing from Murphy's collaborators.[7] The excellent recent histologic researches of Foot,[8] Mallory's colleague of Harvard, and Permar,[9] Klotz' colleague of Pittsburgh University, and others,[10] strongly indicate that the cell of primary significance in the tissue combat against tuberculosis is the vascular endothelial cell, and that the round cell is a relatively later comer in the tubercle whose significance is not great if it has any rôle to play.

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* From the Research Department, National Jewish Hospital for Consumptives.

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Although it is definitely recognized as a result of these researches that the endothelial cell is the phagocyte of greatest importance in tuberculosis, the exact relation of this cell to the resistance to tuberculosis still remains to be disclosed. About the only tangible and clear cut known factor in the resistance to tuberculosis up to the present time is based on the original observation made by Koch,[11] who observed that guinea-pigs injected with living tubercle bacilli responded to a second injection of virulent bacilli differently from the reaction at the primary site. This allergic response, has been the subject of elaborate investigation both in Europe and America. In America, Krause [12] has studied this reaction in great detail, and has given evidence indicating that this allergic factor is of some significance in the resistance to tuberculosis, especially considered from the standpoint of reinfection.

So far as the available medical literature would indicate, there has never been any scientific evidence obtained from laboratory investigations which was interpreted as indicating that a purely chemical non-immunologic factor might be instrumental in accounting for the differences in the individual resistance of man to tuberculosis. On entirely empiric clinical observations, which were initiated in 1889 and finally summarized in monograph form in 1906, Weber [13] was led to treat pulmonary tuberculosis first by giving, one-half hour before meals, sodium bicarbonate and hydrochloric acid to generate carbon dioxid in the stomach, believing, but not demonstrating, that this gas had a detrimental influence on the growth of the tubercle bacillus. His reasoning was empiric—the organs, for instance the muscles, having a large proportion of carbon dioxid, rarely are affected with tuberculosis; in pregnancy when the mother has an excessive amount of carbon dioxid produced by the fetus, tuberculosis becomes ameliorated or arrested; in certain cardiac conditions the lungs are surcharged with carbon dioxid; the same thing is true in emphysema. A large percentage of diabetics die of tuberculosis because the sugar of the body is excreted as such and is not burned to carbon dioxid. Reasoning that levulose is an easily combustible substance in the body, in 1901 he gave this sugar, from 50 to 100 gm. daily, to encourage carbon dioxid production in the body, and later reinforced this with subcutaneous olive oil and petrolatum or liquid petrolatum injections. He believed that the injected liquid petrolatum was oxidized to carbon dioxid in the body.

Weber seemed intent on forcing into use a therapy for which there was, as we now know, no rhyme or reason. In spite of his unscientific reasonings regarding carbon dioxid and tuberculosis and lack of reliable evidence, he seemed to have correlated in an empiric fashion some of the clinical facts in pulmonary tuberculosis. In emphysema and cardiac conditions leading to venous stasis there is a high so-called "immunity" to tuberculosis, while children with tricuspid stenosis die early of tuberculosis; in gravid consumptive women, the pulmonary condition frequently subsides until after delivery; one half of the cases of diabetes mellitus are phthisical. To him these are all correlated with a deficiency or accumulation of carbon dioxid in the lungs, the former favoring progress of the tuberculosis, and the latter a subsidence or prevention of the disease.

Weber did not even study the effect of carbon dioxid on tubercle bacilli in vitro; in fact, he manifested a sublime contempt for such observations.[14] It remained for Wherry and Ervin in 1918,[15] while studying the necessity of carbon dioxid for the growth of tubercle bacilli as a part of a general study on the effect of partial oxygen tensions on the growth of various bacteria, to discover that if the respiratory carbon dioxid evolved by a freshly planted virulent culture of the tubercle bacillus was removed, growth did not take place. The bacilli remained in a nonproductive state but viable, as shown by guinea-pig inoculation two weeks later. They found also that when oxygen and carbon dioxid reach an optimal point, growth starts. Under atmospheric carbon dioxid (7mm.) pressure, there was growth; but at higher pressures (77mm.) there was no growth of the tubercle bacillus. They called attention to the fact that, in a closed system, not only does carbon dioxid accumulate, but also the oxygen supply diminishes. Their experiments, although significant in indicating that carbon dioxid would inhibit the growth of tubercle bacilli, were not elaborate enough to give any idea as to the approximate concentrations or conditions under which this occurred.

Believing this point worthy of further elaboration and investigation, we planned a series of cultural and animal experiments. A large series of tubes of glycerin agar were inoculated with a definitely known strain of human tubercle bacilli, capable of giving a good growth on this medium within four weeks at incubator temperature. These tubes were suitably stoppered after inoculation according to the requirements of the individual experiment. From some of these tubes the carbon dioxid was entirely removed by means of an attached sodium hydroxid absorption tube. In others the carbon dioxid content was varied from that of the concentration of air to pure carbon dioxid (100 per cent.). In order to ascertain the amount of carbon dioxid present by volume, the gases were analyzed before and at the termination of the experiment. In order to determine whether carbon dioxid was inhibitory or bactericidal in action, the stoppers were removed from a certain number of these tubes and cotton plugs substituted, allowing ready diffusion of atmospheric air.[16]

Briefly, these experiments revealed that a small amount of carbon dioxid is essential for the growth of the tubercle bacillus in the test tube, corroborating Wherry and Ervin's observations. A concentration of carbon dioxid as low as 3 per cent. by volume in air distinctly inhibited the growth of human tubercle bacilli in the test tube, while an exposure to a gas of 15 per cent. or more carbon dioxid for a period of one month, so injured the bacilli that they would not grow in air subsequently. Approximately 10 per cent. carbon dioxid had no such deleterious effect.

Haggard and Henderson [17] have given us some idea of the carbon dioxid tension of the tissues by studying the gas tensions of the abdominal cavity. They state as a result of these investigations that the carbon dioxid tension of the abdominal air (normally approximately from 35 to 42 mm. of mercury) soon becomes equiva-

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lent to that of the pulmonary alveolar air and of the arterial blood, and that under abnormal conditions (experimental acidosis) the carbon dioxid tension in the abdominal air falls in close correspondence to the arterial carbon dioxid tension (as low as tension 16 to 23 mm. of mercury).

In view of these facts, actual animal experiments seemed highly desirable. Tubes of glycerin agar were inoculated with human tubercle bacilli and stoppered with paraffined cotton plugs, which allow easy ingress and egress of gases. Some of these tubes were inserted into the subcutaneous tissues of dogs with the opening of the tube exposed to atmospheric air, and some were completely buried in the tissues of the animals and in the abdominal cavity. The tubes with the external opening after from four to six weeks revealed luxuriant growth in the majority of cases, while the buried tubes were in every case negative, indicating that the gaseous constituents of the body are entirely capable of inhibiting the growth of the human tubercle bacillus in the test tube.

If we consider these facts in correlation with observations recently made by Jacobs,[18] who found that carbon dioxid had a special lipoid and cell affinity even in slightly alkaline solutions in contradistinction to sodium bicarbonate, and the observations of Webb and his colleagues,[19] of Tobiesen,[20] and of Tachau and Thilenius,[21] who found that the gas injected into the pleural cavity of consumptives for obtaining an artificial pneumothorax may after a short time contain from 6 to 8.5 per cent. of carbon dioxid, and in cases with associated empyema attain as high as from 10 to 12 per cent. of this gas, it seems reasonable to conclude that carbon dioxid may possibly play a significant rôle in resistance to tuberculosis.

SUMMARY AND CONCLUSIONS

Humoral antibodies have failed to explain resistance to tuberculosis; the lymphocyte as the important factor is rapidly being discarded; allergic phenomena require further elucidation, and the phagocytic action of the wandering endothelial cell is recognized as important. But both humoral and cellular mechanisms of resistance leave much to be explained.

Weber's (1889) empiric reasoning that the deficiency of carbon dioxid in the body favors tuberculosis, while an accumulation retards it, seems to be highly significant and appears to be substantiated by our experimental work thus far conducted.

Three per cent. carbon dioxid inhibits the growth of tubercle bacilli in the test tube, and 15 per cent. is tuberculocidal.

Cultures of tubercle bacilli buried in the tissues of animals and permitted to acquire the carbon dioxid concentration of the body are definitely inhibited in their growth, while other cultures similarily buried, except that ingress of atmospheric air is permitted, show no inhibition.

It appears to us that carbon dioxid may play a significant rôle in the resistance to tuberculosis.

This reopens the consideration of the influence of fatigue, exhaustion, exposure, metabolic diseases, etc., as probable etiologic factors in the causation of tuberculosis in view of their ability to alter the carbon dioxid content of the body.

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CHOLESTEATOMATOUS CYSTIC TUMOR OF THE PITUITARY GLAND

REPORT OF CASE, WITH DISCUSSION OF DIAGNOSIS OF PITUITARY DISEASE *

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This case is reported not only for its rarity, but also to call attention to some local and hormonic signs of pituitary disease which are often overlooked until grave damage is done, both locally by the tumor, and generally by the lack of or increase of the internal secretion of the gland.

Of the local or neighborhood signs, headache is a common early symptom, owing to distention of the glandular envelop. This is often very severe and described as bitemporal. When the tumor bursts its envelop, the headache may disappear; but as the growth extends more into the cranial cavity, severe headaches may again be experienced because of the increased intracranial pressure; then also other signs of brain tumor, choked disks, etc., may be present.

Ocular manifestations are probably the most common local symptoms, owing to the relation of the optic chiasm and the putuitary gland. Pressure of a tumor here first involves the fibers going to the nasal half of the retina, producing first loss of color vision, and then loss of form vision, giving blindness in the temporal fields.

Other signs present are more rare and are manifestations of any tumor at the base.

Changes in the size and shape of the sella turcica, as demonstrated by the roentgen ray, are generally present with a tumor; but owing to the fact that there is much variation in the normal sella in different individuals, very early changes are hard to interpret.

The hormonic signs may be due to a diminished or excessive secretion of the anterior or posterior lobe, or both lobes combined. While on many points the function of this gland and its lobes is yet a matter of controversy, there are certain facts which enable us with some degree of certainty to classify certain signs as being due to abnormal function of one or both lobes.

From clinical observation and experimental work it seems that the secretion of this gland has control of the growth and function of the body as follows:

Anterior lobe manifestations: (1) osseous growth and developmenut; (2) genital growth and function; (3) muscular strength and development; (4) dermal changes, such as texture of the skin and hair; (5) blood pressure, and less marked change on temperature and pulse; (6) also, to some extent, mental development.

Posterior lobe manifestations: (1) Metabolism, as judged by carbohydrate tolerance, basal metabolism, and the deposit and distribution of fat; (2) involuntary muscle tonus; (3) effect on other endocrine glands; (4) mental activity; (5) some effect on temperature and pulse.

REPORT OF CASE

History.—G. P., a Polish laborer, aged 25, who entered the Receiving Hospital, July 7, 1920, and whose family and venereal history was negative, was married in 1912 to a widow, with three healthy children. No pregnancies ensued,

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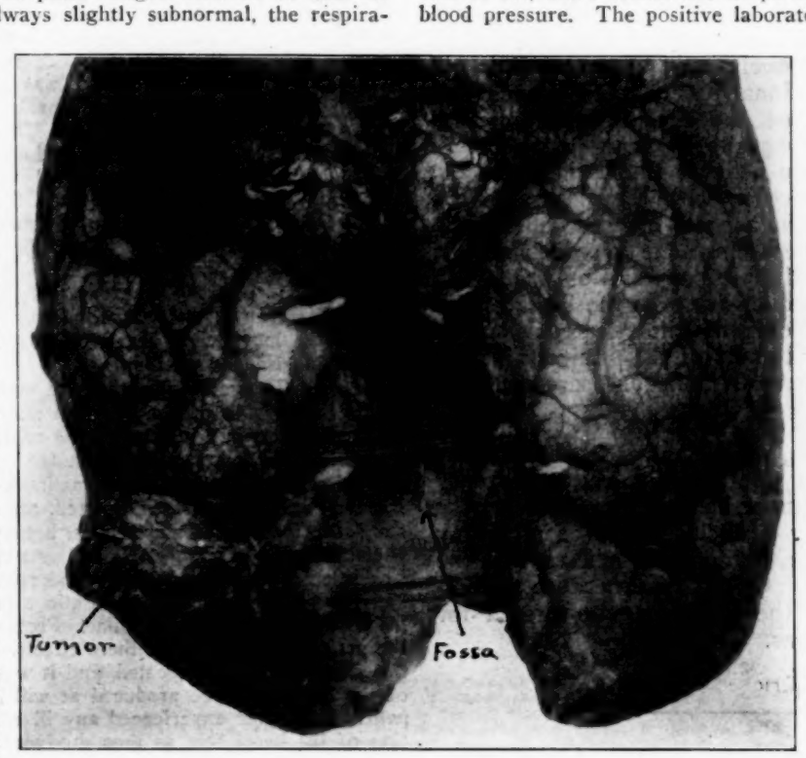
* Read before the Detroit Academy of Medicine, Aug. 15, 1920.

and she left him in 1916. The onset of his present trouble apparently began in 1910 as constipation, which has persisted throughout his illness. In 1913, he began to lose vision in the temporal field of his left eye. The following year he lost it in the nasal field and also in the temporal field of the right eye. At present he could see only in the right nasal field of vision (temporal half of the retina). He had some diffuse dull pain in the head during 1913 and 1914, but since then had had only an occasional dull headache. He also began to lose the hair on the body, face and head in 1913, and noticed that his skin was becoming more delicate and soft. The hair on the head was mostly replaced, but was of a finer, softer character and not as thick. In 1914, he lost all sexual power, and noticed that the penis and testicles were getting smaller. All of these symptoms had persisted. Throughout his illness there had been considerable muscular weakness. He had lost about 10 pounds in the last three or four years. There had been no vomiting and the rest of his history was negative.

Examination.—The patient, weighed 150 pounds. He was 5 feet 8 inches tall. The pulse ranged between 50 and 90. The temperature was always slightly subnormal, the respiration, 20. The patient was well nourished. The skin had a slightly yellowish, pale appearance, soft and fine like that of a woman. The hair of the head was thin, fine and silky. There were only a few straggly, fine hairs on the face. There was no hair on the body or in the axillae. There were a few fine pubic hairs. The skull was normal. The eyes showed normal extra-ocular movements. The left pupil was dilated and fixed; the right reacted normally. The left eye was totally blind, and the right blind in the temporal half of vision. The eyegrounds showed primary optic atrophy, complete in the left and incomplete in the right. Examination of the head was otherwise negative except for some pyorrhea and slight enlargement of the tonsils.



Cystic tumor laid aside, and the fossa in which it was embedded held open by means of two glass rods.

The lungs showed slight impairment of resonance in both upper lobes, with harsh breathing and slightly increased whispered voice. There were no rales. The heart was normal. The abdomen showed an abundant panniculus with a general contour suggestive of the feminine type, due to the deposit of fat with relaxation of the skin. The extremities were normal in appearance except for the skin and hair changes previously noted. The genitals showed an increased deposit of pubic fat. The penis was very small. The testes were about half the normal size.

Neurologic examination was negative regarding deep and superficial reflexes, sensory changes, coordination tests, etc. There was some loss of muscle strength; examination of motor functions was otherwise negative.

The blood pressure at various readings was between 80 and 90 systolic and between 45 and 55 diastolic.

Twenty-four hour specimens of urine ran between 500 and 1,000 c.c. The urine was normal for albumin, sugar and on microscopic examination. The total and differential blood counts were negative. The blood Wassermann test was negative. The blood sugar showed a curve, fasting, of 0.05 per cent.; forty-five minutes after ingestion of 1.75 gm. of glucose per kilogram of body weight, 0.134 per cent.; two hours after sugar feeding, 0.110 per cent.; three hours after sugar feeding, 0.08 per cent.

The urine two, four and six hours after taking sugar was negative for glucose.

Fractional stomach analysis revealed an absence of free hydrochloric acid and a low total acidity; otherwise, examination of the stomach was negative.

The Goetz epinephrin test was negative.

Roentgen report of the head showed the sella to be much enlarged, anteriorly, posteriorly and upward. Apparently there was an enormous enlargement of the pituitary gland, especially of the posterior and superior portions.

Recapitulation and Diagnosis.—These positive findings stand out: An adult with a negative past history began ten years ago to be constipated. This was followed during the next five years by some headache, bitemporal hemianopsia and optic atrophy, with loss of hair and change of skin texture, loss of sexual power and atrophy of the genitals, some redistribution of fat, and a subnormal temperature, slow pulse and low blood pressure. The positive laboratory findings revealed an increased sugar tolerance, a negative epinephrin test, a gastric hypo-acidity and roentgen-ray findings of an enormously enlarged sella turcica. In view of these findings, it seemed plain that we were dealing with a tumor of, or one pressing on, the pituitary gland, producing pressure atrophy at the optic chiasm and also so destroying the gland itself as to give marked symptoms and signs of hyposecretion. Operation was considered; but at this time we were visited by Professor Forsell of Stockholm, Sweden, who was enthusiastic regarding the roentgen-ray treatment of these tumors. His technic was started, along with whole pituitary by mouth. At first there seemed some improvement, but shortly the patient went into delirium and died.

Necropsy (performed by Dr. V. A. Van Valkenberg).—The body, hair, skin, etc., were found to be as noted before death. The left pleura was adherent throughout. There were shotty healed tubercles about the hilum and in the apex of the left lung. The pleura of the right lung was adherent at the apex, with a collection of a dozen healed tubercles in the same area. The heart was normal except for marked increase of pericardial fat and some fatty degeneration of the heart muscle. Examination of the aorta revealed a few atheromatous plaques about the coronaries. The omentum, liver, gallbladder, spleen, pancreas, kidneys, suprarenals, stomach, intestine and appendix appeared normal except for some increased deposit of fat.

The skull cap was easily removed. The dura was normally adherent except in the region of the sella turcica, where it was loosened with great difficulty. A cystic tumor the size of a pigeon's egg was found involving the pituitary gland and extending anteriorly and laterally. The sella turcica measured 1½ inches laterally by 2 inches anteroposterially. It was markedly enlarged and hollowed out, with erosion of bone. The tumor itself was egg shaped. It measured 2 by 1½ inches and consisted of one large cyst with numerous smaller cysts at

the posterior end. The tumor did not involve the brain tissue, but it had forced the cerebral peduncles widely apart. At the base of the tumor there was pituitary tissue about the size of a cherry pit and showing evidence of adenomatous changes.

Microscopic examination by Dr. P. F. Morse revealed cholesteatomatous cysts of the hypophysis, with hyperplasia (compensatory) of the parenchyma cells. There was atrophy of the tubule epithelium of the testes, absence of interstitial cells, and no evidence of spermatogenesis. The kidneys showed marked calcification of the tubules (metastatic calcification), but no other lesion. There was extreme anthracosis, fibrosis and emphysema of the lungs, acute edema and hypostatic congestion. The spleen was normal. There had been recent, active pericholangitis of the liver. There was marked hypertrophy of the heart muscle fibers, and early fibrous myocarditis. There was early arteriosclerosis of the aorta.

CHOLESTEATOMAS

Ewing describes cholesteatomas as tumors composed of lamellated waxy or scaly material enclosed in a wall of stratified squamous cells. They arise from embryonal epidermal inclusions. They occur in all parts of the brain. Some pathologists believe that most cholesteatomas of the brain arise from an inclusion of the pharyngeal wall connected with the hypophysis. Bostroem believes they originate from ectodermal rests carried in with the closure of the brain vesicles. Erdheim reports thirteen cholesteatomas at the base of the brain, none of which seemed to be connected with the pituitary and only a few of which were in the median line. In the literature he could find only one case of cholesteatoma of the infundibulum. Other tumors of the pituitary include diffuse hyperplasia, adenocarcinoma and sarcoma.

SUMMARY AND CONCLUSIONS

In such a case as this, which showed local and internal secretory signs of pituitary disease, at necropsy a rare form of cystic tumor being found involving the gland itself, the futility of the use of the roentgen ray is evident unless it can be definitely shown that the tumor is an adenoma. Operative procedure is indicated in all cases as the method to be chosen for attacking such conditions.

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CARDIAC STANDSTILL WITH SYNCOPE FOLLOWING PRESSURE ON RIGHT VAGUS NERVE *

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History.—A man, aged 54, married, with two children, complained of fainting. No one in his family had had heart disease and no one had had symptoms similar to his own. Except for the diseases common to childhood, the patient had been unusually well all his life. About thirty years ago, however, he was confined to his bed for about one month with what was said to be a "nervous breakdown." He had had no other serious illness. The patient worked as a bookkeeper, slept eight hours at night, walked about 2 miles daily, ate carefully, smoked moderately, drank one cup of coffee, and took no tea or alcohol.

One morning at his request his wife attempted to button his collar. Suddenly his vision became blurred, and he fell to the floor unconscious. His wife, in alarm, rushed out for assistance. In about three minutes, however, he regained consciousness, and feeling no ill effects went as usual to his work.

He complained of no symptoms referable to his gastro-intestinal tract, lungs or genito-urinary or nervous systems. He has had at no time palpitation, dyspnea, precardial discomfort or edema.

Physical Examination.—The patient was a stout, though rather well built and well nourished man, past middle life, who appeared well and unconcerned about himself. The pulse was 75; temperature, 98.8; systolic blood pressure, 140; diastolic, 80; weight, 200 pounds (ideal weight, 168 pounds); height, 69 inches. The skin was smooth, warm and moist. There was a recent abrasion of the left ear. The scalp was clean. The pupils were equal, regular and reacted well to light and accommodation. Vision was normal. The ears, mastoid, nose, pharynx and tonsils were normal. The teeth were in good repair. The tongue was clean and straight. There was no tremor. There were no masses or pulsation in the neck. The thyroid was not enlarged. The thorax was symmetrical and moved well on both sides during respiration. There was normal pulmonary resonance throughout the lungs, no changes in the voice or breath sounds, and no râles. The apex of the heart was felt in the fifth interspace in the midclavicular line. No impulses were seen. There was no enlargement to the right. There were no murmurs, thrills or abnormal impulses. The sounds were of good quality. The pulse was equal, regular and of good force. The abdomen was soft, with no masses, tenderness or rigidity. The liver, spleen and kidneys were not felt. The extremities and the neurologic examination were negative. The urine was acid, with no albumin or sugar. The specific gravity was 1.020. Microscopic examination detected no pus or casts. Blood count revealed: leukocytes, 8,000; polymorphonuclears, 69; lymphocytes, 31. The blood Wassermann test was negative. On fluoroscopic examination the lungs were negative, the heart and great vessels normal in size and position.

To elicit Czermak's sign, pressure was made with the finger on the right side of the neck anterior to the sternocleidomastoid muscle and just below the angle of the jaw. At the same time the heart was auscultated. With moderate pressure, slowing of the heart rate was immediate and pronounced. Firmer pressure was then exerted, and the heart came to a standstill, the patient turned pale, became suddenly limp, and exclaimed, "I am going to faint." At this point the pressure was released and the patient came round, declaring that he had felt precisely the same sensations when he fainted while his wife was fastening his collar. Pressure on the left side of the neck failed to produce these effects. On several occasions this experiment was repeated, and it was found that stoppage of the heart could be produced at will by this method. The patient has never experienced any ill effects following cessation of the heart beat as thus produced.

Electrocardiographic records were obtained of the heart action before and during vagus pressure by Dr. J. Morrison Hutcheson. These electrocardiagrams, reproduced herewith, show that:

1. There is a normal complex with the patient at rest and undisturbed.

2. With slight pressure on the vagus on the right side of the neck there is slowing of the whole heart beat, the normal complex being preserved.

3. With firmer pressure, slowing of the heart is more marked. After the long pauses, idioventricular escapes occur, followed immediately by a normal cycle. Dr. H. B. Williams[1] of New York, who was good enough to study these records, suggests that "it may be that the beat of the ventricle stimulates the auricle mechanically and brings about an activity which the vagus stimulation prevents from occurring automatically. It may be that the increase in coronary circulation due to the idioventricular beat—I mean in the auricular branches, of course—brings about a heightened irritability which enables the auricles to start a contraction despite the inhibitory action of the vagus."

4. Cessation of the heart beat for three and seven-tenths seconds follows still firmer pressure exerted over the right vagus.

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1. Personal communication to the authors.

5. There is no effect from left vagus pressure.
6. No lengthening of the auriculoventricular interval is to be made out.

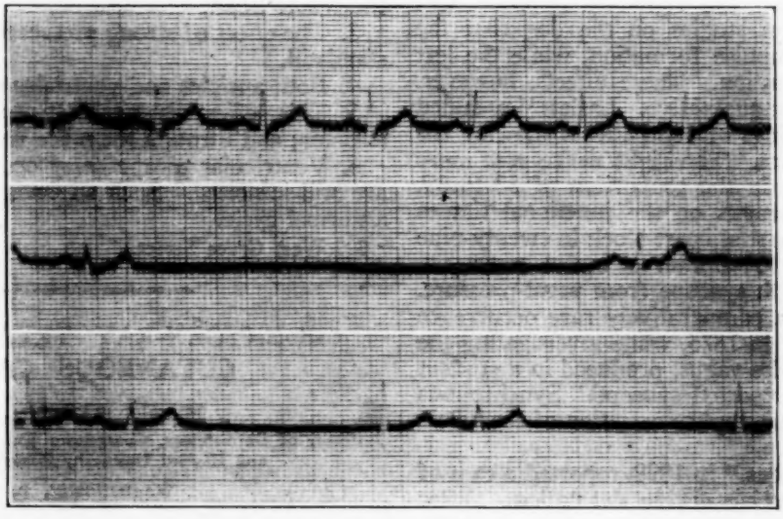
COMMENT

Syncope in a large group of cases is a cardiovascular phenomenon resulting from sudden diminution of the cerebral blood supply. Vascular changes per se may induce fainting in one of several ways. Examples are the faints of hemorrhage, so-called splanchnic dilatation,[2] and pressure over the carotids.[3]

Changes in the state of the heart itself and its mechanism are likewise well recognized causes of sudden transitory loss of consciousness. The effects in the heart may be produced in one of two general ways. Very rapid contractions of the ventricle may produce the same circulatory effects as very slow contractions. In either event the blood column is not moved fast enough to meet cerebral demands, and loss of consciousness results.

Acceleration of the heart's action with loss of consciousness may follow from recurring extrasystoles, either of ventricular or of auricular origin, or during simple paroxysmal tachycardia. Auricular flutter imposes a very rapid rate on the ventricles, and syncope is the common accompaniment of this event. Ventricular fibrillation is probably the cause of most fatal syncope, although this assertion naturally lacks confirmation.

A heart rate of 20 or less is generally admitted to be incompatible with continued consciousness. Of the bradycardias associated with syncope, heart block or the indefinite Stokes-Adams syndrome is the familiar type. However, not every case even of complete heart block is associated with syncope. Bachmann [4] explains the loss of consciousness as due to a temporary ventricular asystole preceding the assumption of the idioventricular rhythm. Lewis [3] has pointed out that considerable pulse slowing may be obtained from extrasystoles—only those beats, of course, which lift the cusps being effective in moving blood. Cardiac standstill may involve the whole heart, or the ventricle alone may participate. Cessation of the heart beat from three to five seconds is sufficient to produce fainting.[3] The human heart may be brought to a temporary standstill by vagal stimulation. Such stimulation may be either reflex or direct.



Upper tracing, normal electrocardiogram with patient undisturbed; middle tracing, standstill of the whole heart for three and seven-tenths seconds following firm pressure on the right vagus nerve in the neck; lower tracing, heart slowed by vagal pressure; following long pauses, idioventricular escapes succeeded immediately by normal cycle.

REFLEX INHIBITION OF THE HEART

Abundant experimental proof of the vagal route of inhibitory stimulation of the heart exists for animals. Goltz [5] long ago showed that the heart of frogs could be brought to a standstill by frequent abdominal taps, and that this effect was abolished when the vagi were cut. McWilliams [6] demonstrated that by irritation of the tail, gills or mucous membranes of the mouth or peritoneum the heart of fishes may be stopped. Carlson and Luckhardt [7] have recently shown that visceral stimulation in amphibia and reptilia may arrest the heart. The mucous membrane of the nose, larynx and lungs seems particularly rich in afferent fibers to the cardio-inhibitory center. Tobacco fumes inhibit the heart beat (Halliburton). Chloroform stops the heart beat, and early deaths before absorption could take place are probably through stimulation of the vagal endings in the lung (Halliburton).

In man, acute dyspepsia, inflammation of the peritoneum, and painful stimulation of the middle ear and testes may slow the heart.[8] Violent intestinal peristalsis, severe pain or even violent mental impressions, as alarming news or a "harrowing scene," may produce syncope through reflex vagal stimulation.[2] Cotton and Lewis [9] have recently reported fainting attacks in nine soldiers with irritable hearts. The attacks occurred while standing in line awaiting physical examination or when blood was withdrawn from the arm for examination. Marked bradycardia and vascular hypotension were discovered during syncope in each case.

EFFECTS OF DIRECT VAGAL STIMULATION

Well established physiologic facts are that: 1. Cutting the vagi results in quickening the heart beat. 2. Stimulation of the peripheral ends of the cut nerves produces, according to the strength of the stimulus, slowing or stoppage in diastole of the whole heart. 3. In animals, both auricles and ventricles are stopped by such stimulation. 4. In most animals, both vagi carry inhibitory fibers. 5. In the dog, the right vagus affects chiefly the sino-auricular node. It also inhibits the auriculoventricular node and bundle. The left vagus inhibits only the auriculoventricular node and bundle.[3] 6. The heart eventually "escapes" a continuous inhibition, varying in capacity according to species.

In man, as in animals, slowing or stoppage of the whole heart may follow vagus stimulation. We know of no experiments with the isolated human vagus. Indirect pressure on the vagus through the carotid sheath, nevertheless, can readily be accomplished in

2. Mackenzie, J.: Principles of Diagnostic Treatment in Heart Affections, 1916, p. 60.
3. Lewis, Thomas: Mechanism and Graphic Registration of the Heart Beat, New York, Paul B. Hoeber, 1920; Osler and Macrea's Modern Medicine 4: 78.
4. Bachmann, G.: Am. J. M. Sc., May, 1919.
5. Goltz: Virchows Arch. f. path. Anat. 2: 26, 1863.
6. McWilliams, in Halliburton: Textbook of Physiology, 1913.
7. Carlson, A. J., and Luckhardt, A. B.: Studies on the Visceral Sensory Nervous System, V, Cardiac and Vasomotor Reflexes Induced by Visceral Stimulation in Amphibia and Reptilia, Am. J. Physiol. 55: 31 (Feb.) 1921.
8. Howell: Textbook of Physiology, 1911, p. 579.
9. Cotton, T. F., and Lewis, Thomas: Observations upon Fainting Attacks Due to Inhibitory Cardiac Impulses, Heart 7: 23.

man on both sides the neck.[10] That such pressure (Czermak's sign) in man slows the heart is well known. Kleeman[11] investigated 127 patients to determine pressure effects on the vagus. Of 150 tests with the right vagus, eighty, or 53 per cent., were without effect. Of 149 tests with the right vagus, ninety, or 60 per cent., were without effect. He points out that, as a rule, pronounced effects occur only in diseased hearts. He believes that diseased hearts always respond to this pressure with slowing, but that not all slowing effects are confined to diseased hearts. Mays[12] also has extensively investigated this phenomenon. Sicard and Meara[13] report two cases of tachycardia arrested by pressure over the right vagus in one case and over the left in the other. Slowing of the human heart by pressure in the neck appears to be not an uncommon occurrence.

Various investigators have studied the relative effects of pressure on the right and left vagus. Robertson and Draper[14] conclude that the right vagus affects chiefly the rate of the heart, while the left affects the junctional tissues. Ritchie[15] maintains that both nerves affect rate and junctional tissues, but that more marked effects are obtained on the right side. Cohn and Lewis[16] conclude from studies on the dog that the right nerve controls impulse formation, while the left controls impulse conduction. These effects, however, are quantitative and not qualitative. Laslett[17] obtained venous and radial tracings of 108 patients showing the effect of vagus pressure. The right nerve was more sensitive than the left, in the proportion of 50 to 39. The influence of the vagus on the junctional tissues was demonstrated by partial heart block in twenty-nine cases and by prolonged A-C interval in five cases.

Cardiac standstill with syncope from vagal pressure, on the other hand, is a comparatively rare occurrence in man. Thanhoffer,[18] in 1875, while investigating the effects of pressure on the vagus, produced in a student of his sudden and unexpected syncope. Synchronous pulse tracings disclosed complete cessation of the whole heart beat.

Neuberger and Edinger,[19] in 1898, reported a case of repeated syncope occurring during defecation. After death a medullary aneurysm was discovered. The rise in the blood pressure associated with defecation was thought to have produced medullary pressure and inhibition of the heart.

Mackenzie,[20] in 1908, reported a case of cardiac standstill of two and one-half seconds following digitalis administration. Wenchebach[21] described a somewhat similar case.

Laslett[22] has described syncopal attacks associated with the arrest of the whole heart of from four to eight seconds. In another study[17] of 108 patients, one case showed a standstill of eight seconds. There is no mention of syncope.

Lewis thinks that cardiac standstill from vagal pressure is not an uncommon phenomenon. He classifies thus the forms of cardiac syncope:

1. From standstill of the whole heart.
2. Slowing of whole heart with lowering of blood pressure.
3. Ventricular standstill only.
4. Ventricular fibrillation.
5. Accelerated heart action (auricular flutter).

SUMMARY

1. From the study of a case of syncope following pressure on the right vagus nerve it appears that the right vagus nerve in man can be stimulated by pressure in the neck.

2. The effect of mild pressure may be slowing of the whole heart.

3. The effect of strong pressure may result in cardiac standstill.

4. Both auricles and ventricles share in this effect.

5. This effect is probably most marked on the auricles; and through them the ventricles are inhibited.

6. Ventricular escapes may occur while the auricles are still inhibited. Such an event in this case initiates a normal cycle.

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11. Kleeman, M.: Test Pressure on the Vagus, Deutsch. Arch. f. klin. Med., September, 1919.

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13. Sicard, M. H., and Meara, F. S.: Heart Cases Showing Vagus Influence, Am. J. M. Sc., December, 1915.

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15. Ritchie, W. T.: Action of the Vagus on the Human Heart, Quart. J. Med., October, 1912.

16. Cohn, A. E., and Lewis, Thomas: The Predominant Influence of the Left Vagus Nerve upon Conduction Between the Auricles and Ventricles in the Dog, J. Exper. Med. **18**: 739, 1913.

17. Laslett: Relative Effects of Right and Left Vagus Nerves on the Human Heart, Heart **7**: 247, 1918-1920.

18. Thanhoffer, L. V.: The Mechanical Irritation of the Vagus Nerves on Both Sides the Neck in Man, Centralbl. f. d. med. Wissensch., 1875.

19. Neuberger and Edinger: Einseitiger fast totaler Mangel des Cerebellums; Varix oblongatae; Herztod durch Accessorius Reizung, Berl. klin. Wchnschr. **5**: 69-72, 100-103, 1898.

20. MacKenzie, J.: Diseases of the Heart, London, 1908 (Ed. 2, 1910, Ed. 3, 1913), p. 345.

21. Wenchebach: Beitrage zur Kenntnis der menschlichen Herztätigkeit, Dritter, Teil, Arch. f. Anat. u. Physiol. (physiologic Section), 1908 (Supplement, pp. 53-86).

22. Laslett: Syncopal Attacks Associated with Prolonged Arrest of the Whole Heart, Quart. J. Med. **2**: 347, 1908-1909.

1. Gocht: Fortschr. a. d. Geb. d. Röntgenstrahlen **14**, 1897.

2. Stenbeck: Mitt. a. d. Grenzgeb. d. Med. u. Chir. **6**: 347, 1900.

ROENTGEN-RAY TREATMENT OF CUTANEOUS CANCER

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I shall attempt to show exactly what can be expected of the roentgen ray in the treatment of cutaneous cancer. The value of this therapeutic agent has been much overstated by some of its friends, whether from a lack of proper observation continued over a sufficiently long space of time or from a sheer desire to advertise. On the other hand, many surgeons do not properly appreciate its real value, possibly because they have seen the results of badly handled cases. Many of the authors who have written on this subject have totally ignored the distinction between basal-cell cancer and prickle-cell lesions. My series of cases is entirely from private practice; the vast majority of cases have been followed, and in more than half a pathologic examination has disclosed the definite nature of the growth.

HISTORICAL

Although cancer of the breast had been treated by the roentgen ray as far back as 1897 by Gocht,[1] it was not until 1899 that Stenbeck[2] presented the first case of skin cancer healed by this therapeutic agent. In

America, Merrill and Johnson [3] of Washington were the first to apply the roentgen ray in cases of cutaneous malignancy. Their paper is still a classic and should be read by every one who is interested in this subject. Beginning with 1901, many papers on the subject appeared, the more important of which are mentioned in Pusey and Caldwell.[4]

In regard to the technic of administration there has been a great change. In the old days, exposures were given from two to five times a week, until the lesions were healed. In the face of many odds, Pusey [5] developed a successful technic and consistently showed that radiation would cure a high percentage of superficial cancers. In 1912, MacKee [6] introduced into America the treatment by large measured doses, which method enabled him to give treatments but once in three or four weeks. MacKee [7] has further modified the method of accurate measurement by showing that an estimation of the spark gap, time, milliamperage and distance, when an interruptless transformer and Coolidge tube are used, will obviate the necessity of employing pastils. Still more recently, Kingery [8] has suggested a method by which constant saturation with the rays is possible. However, this method has not been fully tested out as yet.

VARIETIES OF EPITHELIOMA

It is now generally recognized that there are a number of different varieties of skin cancer, and that any satisfactory classification must be made on a pathologic rather than a clinical basis. Krompecher [9] and Bloodgood [10] deserve especial commendation for their efforts in this field, and I have written concerning this subject.[11]

We must recognize the malignant mole or melanoma, xeroderma pigmentosum, prickle-cell or squamous-cell cancer, the basal-cell cancer, and the carcinomas arising from the various cutaneous appendages, namely the sweat and sebaceous glands and the hair follicles. The most important varieties are the prickle-cell and basal-cell growths, and both pathologically and clinically they are totally distinct diseases, for the former always tends to form metastases, while the latter never does; in addition, the former grows more rapidly and more deeply, and is comparable to cancer of the breast in the therapeutic problems presented. Pathologically, the prickle-cell cancer consists of large cells that take acid stain with avidity, and there are always epithelial whorls present. In the basal-cell growths the infiltration is less deep, the alveoli are smaller, the cancer cells are smaller and take a basic dye; in addition, no epithelial whorls are present.

TECHNIC

The earlier cases were treated with a water-cooled gas tube, a Benoist penetrometer being utilized to measure the quality of the ray, and pastils and Holzknecht radiometer to measure the quantity; however, the vast majority were treated with a Coolidge tube and an interruptless transformer. The dosage employed was: spark gap, 7½; focal skin distance, 8 inches; time, two and one-fourth minutes, milliamperage, 4. This gives about two skin units. In none of the superficial cases was a filter employed, but, when there was a deep infiltration, 1 mm. of aluminum was generally used. As time has progressed there has been a tendency to make the first treatment, at least, rather heavier; for instance, in the early cases one and three-fourths minutes was practically the standard time, but for the last three years two and one-fourth minutes has been universally employed. Of course, when a filter was used the time was much increased. The interval between treatments depends on the amount of reaction. A second treatment is not given in the presence of a marked erythema; however, the average interval is three weeks. None of the cases were treated by a preliminary curettage.

SARCOMA

One case of rapidly growing sarcoma of the subcutaneous tissue of the face of an old man was treated. However, as the result of two intensive treatments the condition was considerably worse than at the beginning. MacKee reports that he has successfully treated a number of cases of various types of sarcoma.

MALIGNANT MOLES

One case of malignant mole of the temple was treated with the roentgen ray. In this case the original growth was cured by one intensive treatment, but within the year metastases appeared in the lymph nodes, viscera and skin, and the patient speedily succumbed.

MacKee [12] reports two cases of this condition successfully treated by the roentgen ray; in these cases, metastases had not developed. I know of one case of malignant mole of the cheek with metastases in the cervical lymph nodes successfully treated by Groover.

XERODERMA PIGMENTOSUM

One interesting case of xeroderma pigmentosum was followed from the time the child was 3 months old until his death at 4 years of age. At the early age of 2 years, malignant tumors began to appear on the face and neck. More than twenty of these were entirely dissipated by the roentgen ray, but eventually two rapidly growing lesions developed which were absolutely not influenced by the ray, and death resulted from these.

BASAL-CELL CANCER

The types of basal-cell cancer that may be recognized are: (1) very superficial types which resemble psoriasis,[13] the chief difference being that a few early nodules can be seen at the edge of the lesions; (2) the common superficial rolled edge type, usually with a superficial central ulceration, but occasionally with a fungus growth in the center; (3) deep ulcers; (4) the superficial nodular type; (5) deep nodules, which frequently take the form of infiltrated plaques; (6) the morphea-like type, which is really an indurated plaque, and (7) the cicatrizing type, in which there is a spontaneous healing in the center, while there are nodules or even ulcers at the edge.

One hundred and four persons were affected, and 147 basal-cell cancers were treated. Of these patients, sixty-one were men and forty-three were women. The ages are given in Table 1.

In seventy-seven instances the cancer sprang from keratoses; in eleven instances, from congenital warts or

3. Merrill and Johnson: Philadelphia M. J. **6**: 1089, 1900.
4. Pusey and Caldwell: The Roentgen Rays in Therapeutics and Diagnoses, Philadelphia, 1904.
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6. MacKee and Remer: New York M. J., March 29, 1913.
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9. Krompecher: Der Basalzellenkrebs, Jena, 1903.
10. Bloodgood: Progr. Med., December, 1904, p. 134.
11. Hazen, H. H.: Skin Cancer, St. Louis, 1916; Prickle-Cell and Basal-Cell Skin Cancers, J. A. M. A. **64**: 958 (March 20) 1913; South. M. J. **10**: 241 (March) 1917.
12. MacKee, G. M.: J. Cutan. Dis. **37**: 179 (March) 1919.
13. Ketron, L. W.: J. Cutan. Dis. **37**: 22 (Jan.) 1919.

fibro-epitheliomas; in three instances, from pigmented moles, and in six instances from constant slight trauma, almost invariably that produced by tightly fitting glasses.

TABLE 1.—AGES OF PATIENTS

	Number of Cases
From 20–29	3
From 30–39	4
From 40–49	18
From 50–59	33
From 60–69	24
From 70–79	16
From 80–89	6

As regards previous treatment, it should be noted that eleven cases had been treated by the roentgen ray, eight by radium, six by caustics, four by the knife, and one by the electric needle.

There were eleven relapses in this series. In all instances the relapse occurred within one year from the last treatment. MacKee reports that of his twenty-four relapses, eighteen occurred in the first year, four in the second year and two in the third year. In my experience relapses appear much earlier in superficial growths than they do in the deeper ones.

The results of treatment are given in Table 2. I have listed as healed cases that have been followed less than one year. It should specifically be mentioned that not one of these cases shows any suspicion of relapse at the present time.

TABLE 2.—RESULTS OF TREATMENT

	Number of Cases
Well 3 years	16
Well 2 years	17
Well 1 year	39
	72
Relapses cured	4
Relapses healed	2
Healed	41
	119
Not cured	16

From the standpoint of the roentgenologist, the majority of these cases should not be classed as failures, as practically all of the cases were really unsuitable for treatment. These failures will be discussed more fully a little later.

A study of the cases shows that neither the age nor the sex had any bearing on the result. The result of treatment on the various types of lesion is shown in Table 3.

TABLE 3.—RESULT OF TREATMENT ON VARIOUS TYPES OF LESION

Type of Lesion	Total	Well	Healed	Recurrence Healed	Failed
Superficial plaque	5	5	..	..	..
Rolled edge	80	44	22	2	7
Deep ulcer	9	1	..	1	4
Superficial nodule	28	12	12	1	..
Deep plaque or nodule	22	9	5	2	5
Morphea-like	1	1	..	..	..
Cicatrizing	2	..	2	..	..
	147	72	41	6	16

As regards the results of treatment, the location of the lesions has proved important. Basal-cell cancers situated on the eyelids and the ears, where cartilage is involved, have notably resisted treatment. MacKee has noted in his study of cases that cases involving the cartilage of the eyelid were very difficult to cure. Sutton [14] and others [15] have had difficulties with cases involving cartilages of the ear. In this series of cases, seven growths on the ears were treated; of these three are healed, one is still under observation, and three were a total failure. Table 4 shows the location of the growths and the effect of treatment on them.

As regards the results of radiation, with reference to previous treatment it should be noted that the patients who had had many previous roentgen-ray or radium treatments did not do nearly so well as did the untreated patients. It would seem that cancer cells can in time acquire a definite immunity against further radiation.

Table 5 shows the results obtained in cases in which the patients had not had treatment or had been given treatment of various types. It will readily be observed that the cases in which no treatment had been given

Fig. 1.—Basal-cell cancer when first seen.

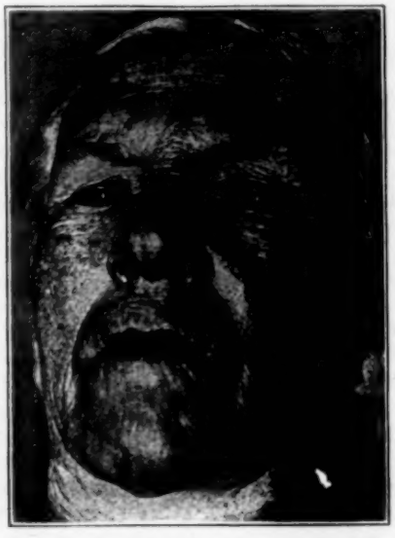

Fig. 2.—Same case three weeks later, after one treatment.

Fig. 3.—Same case five years later. Keratosis has developed on left cheek.

14. Sutton, R. L.: Carcinoma of the External Ear, J. A. M. A. 74: 88 (Jan. 10) 1920.

15. Schultz: X-Ray Treatment of Skin Diseases, New York, Rebman Company, p. 151.

yielded much better to the roentgen ray than the cases in which either radium or the roentgen ray had been applied.

No attempt has been made to heal the lesion with one heavy dose. I am of the opinion that two or three small doses are less likely to be followed by sequelae than when one very heavy dose is used. Table 6 shows the number of treatments required to heal the lesions.

TABLE 4.—LOCATION OF GROWTHS AND EFFECT OF TREATMENT

Location		Recurrences Cured	Recurrences Healed	Cases Healed	Failures	Total
Scalp	1	..	..	..	..	1
Forehead	4	..	..	1	1	6
Left temple	6	..	..	2	..	9
Right temple	1	..	..	4	2	7
Right outer canthus	1	..	..	1	..	2
Left outer canthus	..	..	..	2	..	5
Right inner canthus	3	1	..	3	1	8
Left inner canthus	..	..	..	1	..	1
Nose	14	1	..	10	1	27
Right nasal facial fold	2	..	..	1	1	4
Left nasal facial fold	2	..	1	..	1	4
Right nasal labial fold	..	..	..	1	1	1
Left nasal labial fold	..	..	1	1	1	4
Upper lip	2	..	..	..	1	3
Lower lip	..	..	..	..	1	1
Right cheek	5	..	..	7	1	16
Left cheek	12	..	..	3	1	18
Chin	4	..	..	..	..	4
Right neck	4	..	..	1	..	5
Left neck	4	1	..	..	..	7
Back	2	..	..	..	..	3
Chest	1	..	..	..	..	1
Hand	3	..	..	..	..	3
Elbow	1	..	..	..	..	1
Left ear	.	..	..	2	1	4
Right ear	..	..	..	1	2	3
	72	3	2	41	16	147

Analysis of the failures is particularly instructive. Sixteen cases did not respond to treatment. Six of these were hopeless at the start, hopeless because of their large size and deep infiltration. Three patients received but one or two treatments each. Two patients had had large amounts of roentgen-ray treatment in fractional dosage, and both totally failed to respond to intensive radiation. In three instances, the cartilage of the ear was deeply invaded, and none of these patients responded to radiation, although all of these were cured by the cautery. One case deeply involved the corner of the lower eyelid. This case did clear up temporarily once, to relapse within two months. It is a fact generally observed that neoplasms which have involved the cartilage either in the ear or on the eyelid are notoriously difficult to cure either with the roentgen ray or with radium.

TABLE 5.—RESULTS WITH NO TREATMENT AND WITH VARIOUS TYPES OF TREATMENT

No. of Cases	Cures	Healed	Relapses Healed	Failures
No treatment	52	34	3	7
Excised	5	1	..	..
Cautery	3	2	..	1
Roentgen ray	3	1	2	6
Radium	4	3	1	2
Totals	67	41	6	16

TABLE 6.—NUMBER OF TREATMENTS REQUIRED TO HEAL LESIONS

Treatments	1	2	3	4	5	6	Many
Type of lesion:							
Superficial plaque	2	3	..	..	.	.	.
Rolled edge	3	37	17	4	2	.	2
Deep ulcer	.	..	1	1	.	.	.
Superficial nodule	2	3	15	4	.	.	.
Deep nodule	1	4	2	1	4	3	.
Morphea-like	.	1	..	..	.	.	.
Cicatrizing	.	..	2	..	.	.	.
Totals	8	48	37	10	6	3	2

PRICKLE-CELL CANCER

Fifteen patients with prickle-cell cancer were treated. Eleven of these patients were men and four were women. Three cases had originated from keratoses, two from scars and two from undiagnosed dermatoses. Of these lesions, three were located on the hands, two on the lips, one on the scalp, two on the temple, one in the ear, three on the cheeks, on on the vulva and two on the body. Four cases were permanently cured; three healed under treatment, although it is still too early to say that the patients are well, and eight were not in the slightest degree influenced. The seven healed cases responded just as readily as the basal-cell cancer. One case of cancer of the lower lip is worthy of comment. The lesion was of one year duration, was nearly an inch in diameter, was deep seated, and there were some shotty glands in both anterior triangles of the neck. Because of the patient's general condition, two surgeons refused to operate. The man received one heavy roentgen-ray treatment with 1 mm. of aluminum for the lip and 3 mm. for the neck. The lip totally cleared up and he remained well for five years, at which time he died from influenzal pneumonia. As opposed to this case was that of a woman who had a small, superficial lesion on the right cheek. Three usual doses failed to modify it; then a heavy treatment produced a second degree radiodermatitis, but the lesion recurred just as soon as this healed. Excision revealed a prickle-cell carcinoma. It should be observed that, in cases of prickle-cell cancer, not all of the cancer cells respond in the same manner; and they do not respond as the laboratory experiments would lead us to believe.

Fig. 4.—This patient had five basal-cell cancers. Four of them did not recur, but with the large one which had invaded bone when first seen, treatment was ineffective.

MODE OF ACTION OF THE ROENTGEN RAY

It is generally agreed that both the roentgen ray and radium act by inhibiting the mitotic action of the cancer

cell nuclei. The failure of the roentgen ray to cure growths which have invaded cartilage raises the interesting question whether this is a sole action. It would seem possible that the reaction of the tissues against the cancer cells might play a part. A pathologic study of invaded cartilage fails to reveal any lymphatic or fixed cell infiltration walling in the malignant issue. It

Fig. 5.—Rapidly growing prickle-cell cancer of cheek, healed by two treatments. The lymph nodes were removed by a block operation.

would seem possible that the absence of these cells may play a part in the failure of radiation to cure cancer in cartilage. As bearing on the question of the action of the roentgen ray and radium, the papers of Prime [16] and of Kimura [17] are of interest.

THE QUESTION OF DOSAGE

In exceptional instances it has been found that a 2 unit dosage will fail to benefit a basal-cell growth, but that a 2½ unit dose will accomplish this end. In practice, if the first dose does not have a very beneficial effect, the second dose is always made considerably heavier.

THE QUESTION OF FILTRATION

I am strongly convinced that superficial growths should be treated with an unfiltered ray. Time and again I have seen skin lesions, either primary skin cancers or cutaneous metastases, fail to dissipate completely under two or three heavy treatments when the rays were filtered through 2 or 3 mm. of aluminum, only to disappear like magic before one heavy unfiltered dose. It is interesting to note that MacKee is of the same opinion. Unfortunately, at present we have no statistics that really show a comparison between hard and soft rays; such a study is urgently needed.

OUTLOOK FOR THE FUTURE

The modern tendency in both roentgen-ray apparatus and technic is toward the possibility of giving heavy, thoroughly filtered treatments that will make it possible for a deeply seated neoplasm to receive what is usually considered to be a lethal dose. In view of the experience quoted in the previous paragraph, heavier apparatus will not cure a higher percentage of skin cancer than the ordinary interruptless transformer and Coolidge tube.

16. Prime, F.: J. Cancer Res. **2**: 107 (April) 1917.
17. Kimura, N.: J. Cancer Res. **4**: 95 (April) 1919.

STATISTICS FOUND IN THE LITERATURE

The more important statistics concerning the results from radiation are summarized by MacKee, so that it is hardly necessary to report them here. Suffice it to say that practically no one has considered the all important question of the pathology, nor do the majority of writers cover a large series of cases observed over a sufficiently long space of time. However, MacKee's own report is excellent. He reports 258 cases; 222 of the patients remained under observation. In this series there was 90 per cent. of cures. Of selected cases "the percentage of cures would be in the neighborhood of 96 to 98 per cent."

Again I must express my inability to accept statistics which claim more than 99 per cent. of cures, especially as authors who claim such statistics do not deal with the pathology of the lesions encountered.

COSMETIC RESULTS OF TREATMENT

In general, the cosmetic results from roentgen-ray treatment are excellent. In about fifteen of my cases a slight amount of telangiectasia resulted. As a matter of fact, it is surprising to note that if this sequela appears it is much less likely to result from three or four very intensive doses over a small area than from the same number of considerably smaller doses over a larger area. This phenomenon offers interesting grounds for speculation.

COMPARISON OF METHODS OF TREATMENT

The treatment of basal-cell cancer with carbon dioxid snow, the electric needle, superficial curettage and burning with superficial caustics is mentioned only to be condemned. In a study of the surgical results from Johns Hopkins Hospital, I reported a percentage of 86 of cures in the unselected cases and 93 in selected

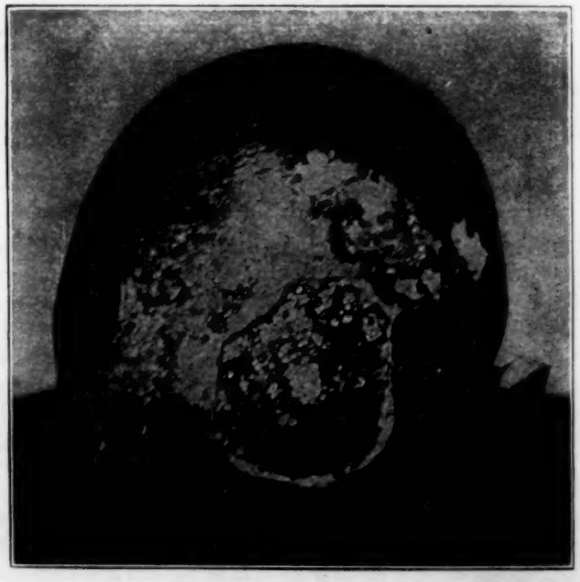

Fig. 6.—Extensive prickle-cell cancer developing in the scar of a burn. This was healed by the roentgen ray, but the ultimate result is still undetermined.

cases. A really good surgeon can do excellent work both in curing the disease and in leaving an excellent cosmetic result; but a less skilled surgeon can hardly equal the results of the expert roentgenologist. Surgery has the advantage of cleaning up a lesion much more rapidly than does the roentgen ray, but only too frequently the desire of the surgeon to produce a good

cosmetic result leads him to excise too little tissue so that a recurrence is inevitable. Sherwell [18] claims 90 per cent. permanent cures in selected cases by a thorough curettage followed by the vigorous use of acid nitrate of mercury. Robinson claims to have cured at least 90 per cent. from an arsenical paste. I believe that it is infinitely better to use an anesthetic and the actual cautery in preference to any of the caustics. The vast majority of patients who have once had a caustic used have no desire to repeat the experience unless they are devotees of martyrdom. Up to the present there has appeared in the literature no report of a large number of cases of skin cancer, pathologically studied and followed over a sufficient space of time, which have been treated by radium. There is every reason to believe that the action of the roentgen ray and radium on skin cancer is practically identical. In my series of cases, five that refused to yield to the roentgen ray also refused to yield to radium. MacKee's experiences were similar.

NOTE.—Since this article was written, a deeply indurated plaque has been excised in one case which was classed as a failure and in which many fractional roentgen-ray treatments had previously been given. Careful microscopic study has shown that no cancer cells were present, but that the mass was scar tissue. This result naturally decreases the percentage of failures.

1912 R Street.

AURICULAR FLUTTER AND FIBRILLATION IN PREGNANCY

REPORT OF CASE.*

CLARENCE P. THOMAS, M.D.
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The literature on cardiac complications of pregnancy is rich in the description of valvular lesions, and in discussions as to the advisability or inadvisability of patients with such lesions becoming pregnant. I have been unable to find, however, in a thorough search of all the literature, any mention of cardiac arrhythmias in pregnancy, or any cases of auricular flutter or fibrillation accompanying that state.

The apparent rarity of these conditions is no doubt partially due to the consensus of medical opinion that a definite mitral stenosis should contraindicate pregnancy, coupled with the fact that auricular fibrillation is most frequently found in mitral stenosis cases. Another factor may be the failure correctly to diagnose the arrhythmias encountered , because of the lack of opportunity to study the cases by means of the electrocardiograph.

The records of the Sloane Hospital for Women contain six cases of auricular fibrillation in pregnant women, but the reports of these cases have never been prepared for publication. Getman [1] reported two cases in which there was lost cardiac compensation and the patients were successfully delivered under gas-oxygen anesthesia, and mentions that the heart was very irregular in both. He does not, however, state the type of arrhythmias present.

The present case is therefore reported on account of its uniqueness and to call attention to the possibility of successful treatment of certain types of tachycardia that threaten the life of pregnant women.

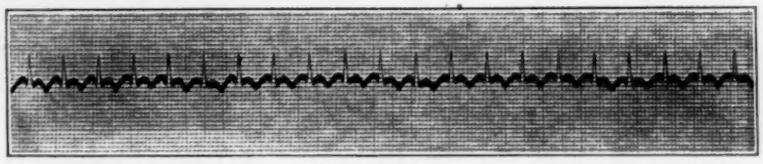


Fig. 1.—Auricular flutter at rate of 320 a minute, Oct. 9, 1919; Lead III; ventricular rate, 160.

REPORT OF CASE

History.—An American woman, aged 31, was admitted to the Presbyterian Hospital on the evening of Oct. 8, 1919, complaining of severe shortness of breath, pain over the heart, and swelling of the feet and ankles, of two weeks' duration. The family history was irrelevant. The patient had been married for eight years, and had two children, born six and two years before admission. Both died of influenza in the epidemic of 1918. She had one miscarriage three years before, at four months. Cardiac trouble began ten years before, when she had acute follicular tonsillitis, followed by precordial pain and dyspnea, which confined her to her bed for three weeks. Numerous attacks of tonsillitis occurred after this, but rheumatic fever and chorea were denied. She had also suffered from several subsequent attacks of precordial pain, dyspnea and bronchitis, the most severe of these appearing after the birth of her first child, six years before. There were no cardiac symptoms noticed during her second and third pregnancies. One month before admission, the patient was told at a maternity hospital that she was in the fifth month of pregnancy. Nothing was said to her regarding a cardiac condition. Two weeks before admission she began to have precordial distress, and moderate dyspnea on slight exertion. These symptoms rapidly increased in intensity, being followed, at the end of a week, by swelling of the feet and ankles. Two days before admission, she was forced to remain in bed because of extreme shortness of breath, and she had marked orthopnea at night. Other symptoms at this time were dizziness, vomiting, constipation, severe frontal headache, and scanty dark urine.

Physical Findings.—On admission, the patient was semicomatose, with marked dyspnea, orthopnea, and cyanosis of the lips. The tonsils were moderately enlarged and ragged. There were signs of a small collection of fluid in the right chest, and fine, moist râles were scattered over both lungs posteriorly. There was an extremely rapid pulsation of the veins of the neck, apparently synchronous with the apex beat of the heart. Pulsation was marked over the left side of the precordial area. A thrill, systolic in time, was palpable at the apex. The right border of cardiac dulness was 4 cm. to the right of the midsternal line, in the third and fourth spaces, and the apex beat was maximal 12 cm. to the left in the fifth intercostal space. The heart rate was about 180 and regular. A short, rough, systolic murmur was heard at the apex,

Fig. 2.—Change to fibrillation; ventricular rate, 131; October 10, Lead II.

18. Sherwell, S.: Further Observations on the Technique of an Efficient Procedure for the Removal and Cure of Superficial Malignant Growths, J. Cutan. Dis. **28**: 487, 1910.

* From the Department of Medicine, Columbia University College of Physicians and Surgeons.

1. Getman, W. T.: Delivery Under Gas and Oxygen of Two Patients with Lost Cardiac Compensation, J. A. M. A. **68**: 547 (Feb. 17) 1917.

transmitted for a short distance into the left axilla. No other murmur could be made out. The pulse was very feeble and thready, and could not be counted with accuracy, but was approximately 180 and regular. The blood pressure was not readable. The abdomen presented a firm, rounded mass, extending from the symphysis pubis to the umbilicus. Fetal parts could be made out, but fetal heart sounds were at no time heard. The liver edge was felt extending 5 cm. below the right costal margin in the midclavicular line, and palpation in this region elicited much tenderness. The extremities showed edema of the feet, pretibial regions, and hands.

Treatment and Course.—On the morning following admission, the condition of the patient was unchanged. An electrocardiogram was taken, during which procedure pressure was made on first the left, and then the right vagus, without any effect on the heart rate. The electrocardiographic diagnosis was auricular flutter, with 2:1 heart block (Fig. 1). Digitalis therapy was at once instituted, with an initial dose of 1 c.c. of a digitalis preparation intravenously, followed by the same dose given intramuscular every four hours.

Fig. 5.—Fibrillation with slow ventricular rate and premature ventricular contraction; rate, 60; Lead II; October 30.

On the next morning, while the patient was being examined, her heart rate dropped suddenly from 165 to 112, becoming, at the same time, totally irregular. The electrocardiogram at this time showed auricular fibrillation (Fig. 2). Up to this point, she had received the equivalent of 105 minims of tincture of digitalis, or 0.7 gm. of the dried leaves, in a period of twenty-four hours. Her dyspnea was less marked, cyanosis had vanished, and she appeared much brighter.

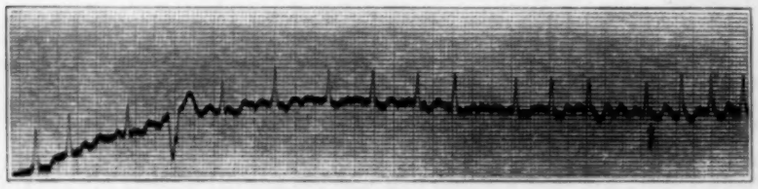


Fig. 4.—Fibrillation; moderately fast ventricular rate; Lead II; ventricular rate, 109; October 16.

Digitalis was continued in the form of the tincture, by mouth, as shown in the chart (Fig. 3). The chart also shows the heart and pulse rate, the shaded area denoting the pulse deficit. Definite signs of mitral stenosis became apparent after the reduction of the heart rate (Fig. 4). October 30, the electrocardiogram showed characteristic auricular fibrillation (Fig. 5).

November 2, the patient was transferred to the Manhattan Maternity Hospital, as labor had begun. On the following morning, she was delivered of a dead fetus weighing 5½ pounds. The labor was uncomplicated, and was without anesthetic. At no time did her heart rate exceed 105. On the day following labor, she showed no signs of cardiac insufficiency. She left the hospital, November 13, and for six months following reported at the outpatient department of the Presbyterian Hospital regularly every two weeks. Throughout this period she was taking 15 minims of tincture of digitalis, three times a day. When last seen, in May, 1920, her condition was excellent. She was doing light housework without discomfort, having dyspnea only after considerable exertion. The apex beat was felt 9.5 cm. to the left of the midsternal line in the fifth space. The right border was at the sternal margin. The apex rate was 100, totally irregular, and the pulse rate 76. The lungs were clear throughout, and there was no edema of the extremities.

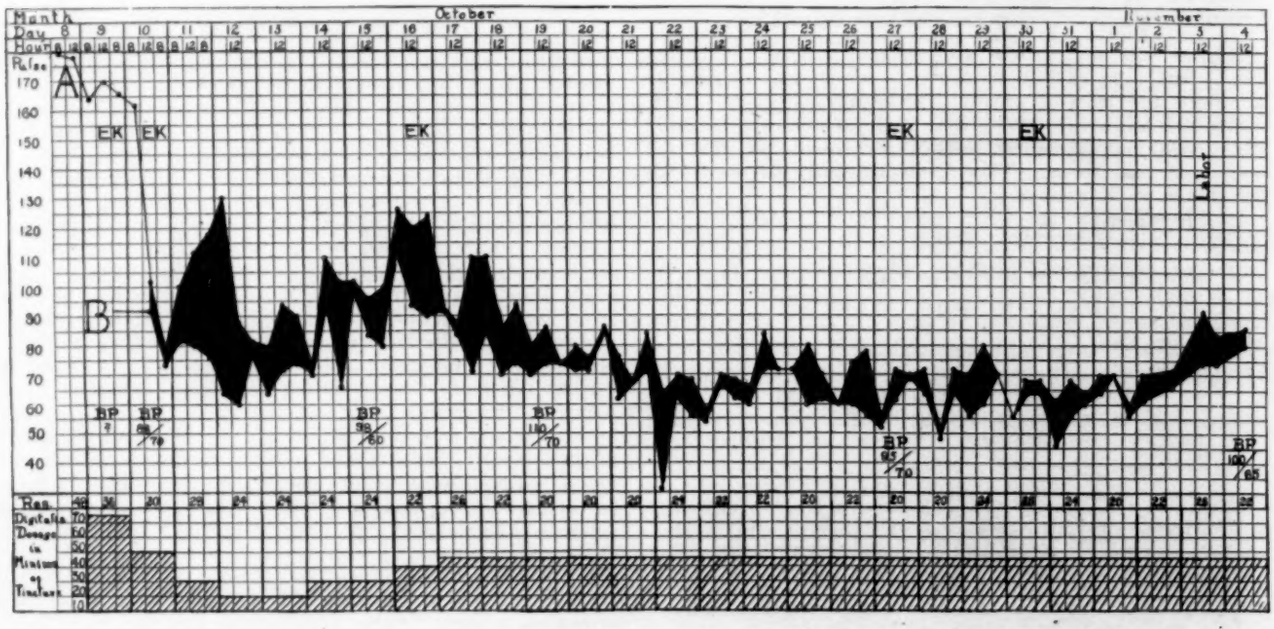


Fig. 3.—Changes in pulse rate, the blood pressure at intervals, and the dose of digitalis in minims, from the date on which the electrocardiograms were made. The upper line (*A*) represents the heart rate as counted at the apex. The lower line (*B*) represents the pulse rate as counted at the wrist, and the intervening solid portion, the pulse deficiency. The columns at the bottom of the chart indicate the amount of digitalis in minims of the tincture administered daily. *E K*, the electrocardiogram.

COMMENT

The literature contains no reports of cardiac arrhythmias in pregnancy. The case here reported illustrates the possibilities of treatment in such cases when they occur or are discovered late in pregnancy. It shows the advantages of a prompt and accurate diagnosis followed by digitalis therapy. I do not pretend to advise similar treatment

for all such cases, since the handling of such patients must depend on the advisability of allowing the pregnancy to go to term, considered, of course, in conjunction with the purely obstetric aspects of the case.

365 East Avenue, Rochester, N. Y.

PERCUSSION NOTE OF THE BACK IN THE LATERAL POSITION *

TASKER HOWARD, M.D.
BROOKLYN

In 1917, I [1] published a short report of observations on the varying character of the percussion note of the back when a patient is turned from one side to the other in the lying position. The study was suggested by the negative necropsy findings in a patient who presented an area of dulness, amounting almost to flatness, about the angle of the scapula on the right side as he lay on the left side shortly before death. A search of the literature at that time and later brought out surprisingly little information about this rather puzzling subject. A review of the titles of periodical literature for years back disclosed but few clues to papers which might deal with the subject, and such clues, when followed up, proved for the most part fruitless. Textbooks on physical diagnosis, and monographs on percussion by twenty-four different authors, going back to 1832, and including many editions of some authors, yielded some information.

Gerhardt,[2] in 1866, brought out the fact that when a patient lies on the side the diaphragm falls away from the chest wall on the upper side, the lung pushing down to fill the complemental space, while on the lower side the diaphragm is crowded up a little. The effect of this phenomenon, as bearing on the level of the lung border in the axilla, was noted. This change in the position of the lung border in the axilla in the lateral recumbency was described in several of the later textbooks consulted. The influence of posture on the level of the diaphragm was emphasized by the fluoroscopic studies of Hoffbauer and Holzknecht.[3] The extent of this shift is difficult to appreciate without the aid of the roentgen ray. The accompanying roentgenograms [4] illustrate the usual change. They are by no means exceptional. Aside from an occasional reference to the level of the diaphragm in the axilla, twenty-one of the twenty-four authors made no mention of differences in the percussion note of the two sides with the patient lying on the side.

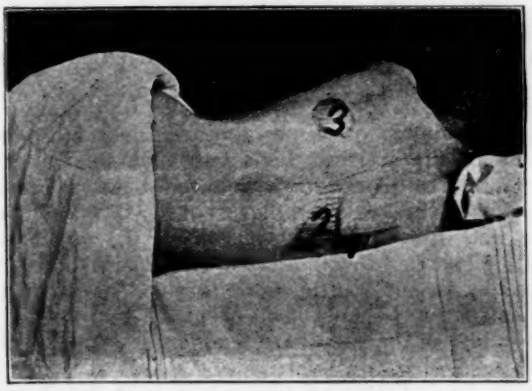
Vierordt,[5] in 1892, described the fact that percussing that zone of the chest that lies nearest the bed will elicit a dull note because the vibrations of the chest are dampened in the region by the pressure of the bed.

Cabot,[6] in 1900, and after him Wilson [7] described a diminished resonance of the lower side when the patient is in the lateral decubitus because of a compression of the lower side and a consequent greater amount of air in the upper side. Later Cabot [8] added a footnote to the effect that "there is also a shade of tympany associated with the dulness of the feebly expanded lung of the lower side."

In an article on pneumonia published in 1903, Conner and Dodge [9] state that "in examining the back of a patient who is lying on his side, the lower side of the chest, because of its compression, or perhaps because of its contact with the mattress, will give almost always a percussion note noticeably deeper and more resonant than that of the upper side." This statement is quoted in Osler's textbook, and, so far as I am aware, is the earliest description of this phenomenon.

In 1917, at which time I was not familiar with this observation, I [1] drew attention to the fact that frequently when a patient lies on the side, the spine at the level of the shoulders and pelvis is propped up, while its center tends to sag, thus separating the ribs to some extent on the lower side and crowding them together on the upper side. To this I attributed the fact that the note is frequently more resonant over the lower side than over the upper side.

In order to review these various observations, a series of fifty patients, which includes the twenty whose cases had already been reported, was studied, and the variations in the percussion note over the back were noted with the patient lying first on one side and then on the other. It was found that:



Areas of relative dulness frequently seen in the normal chest with the patient lying on the side: 1, zone of dulness due to deadening effect of the mattress; 2, dulness at base due to higher level of diaphragm and possibly to compression of chest by weight of body; 3, area of dulness due to crowding together of the ribs by the sag scoliosis, which may be seen.

1. There was almost invariably a well marked change in the percussion note over a zone from 2 to 4 inches in width lying next the bed on the dependent side. The percussion note over this zone was short and high pitched, and it seemed reasonable to suppose that this is the result of the deadening of the vibrations by the pressure of the bed. The note over this zone also frequently had a musical quality. It was a real tone rather than a mere sound, so that although it had some characteristics of a dull note, there was frequently superadded a tympanitic quality. The cause for the tympanitic quality will be discussed later.

2. In nineteen patients comparatively less resonance was noted throughout the lower side, as described by Cabot and others. This is ascribed to compression of the lower side by the weight of the body.

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* From the Department of Medicine of the Long Island College Hospital.

1. Howard, Tasker: Note on Percussion of the Back in the Lateral Posture, Hosp. Bull. Dept. Public Charities, New York **1**: 63 (April) 1917.
2. Gerhardt, G.: Lehrbuch der Auskultation und Perkussion, Tübingen, 1866, p. 126.
3. Hoffbauer and Holzknecht: Die Veränderungen des Standes und die Exkursionsbreite des Zwerchfelles in den verschiedenen Körperlagen, Mitt. a. d. Lab. f. radio. Diag. u. Therapie, Jena, 1907.
4. Owing to lack of space, the roentgenograms are omitted here. They will appear in the author's reprints.
5. Vierordt, Oswald: Diagnostik der inneren Krankheiten, Ed. 3, Leipzig, 1892, p. 89.
6. Cabot, R. C.: Physical Diagnosis, New York, 1900.
7. Wilson, J. C.: Handbook of Medical Diagnosis, 1909, p. 133.
8. Cabot, R. C.: Physical Diagnosis, Ed. 4, 1909.
9. Conner, L. A., and Dodge, G. E.: A Study of the Physical Signs of Lobar Pneumonia, Am. J. M. Sc. **126**: 390 (Sept.) 1903.

3. The effect of the shift of the level of the diaphragm on the lower border of pulmonary resonance is much more apparent in the axilla than in the back, although a change of 1 or 2 cm. may often be made out by percussion in the scapular line. However, there often appears an area of relative dulness at the base on the dependent side which extends up to the level of the ninth or eighth rib. Of twenty-seven patients examined for this point, it was observed in nineteen. The area was not dull enough to be explained by an entire absence of pulmonary resonance. The roentgenograms suggest that this dulness is due to a thinning out of the pulmonary tissue by the dome of the diaphragm, which is crowded up on the lower side. The diaphragm is dragged away from the chest wall on the upper side so that a thicker layer of lung lies below the percussing finger over the base of this side, and a relatively more resonant note results over this area. Compression of the lower side of the chest by the weight of the body would also operate more effectively near the base of the lung, because at this point the chest bears more weight than does the upper part, which is more or less supported by the shoulder.

4. Of fifty patients examined, twenty-two showed an area of relatively diminished resonance on the upper side which shifted to the opposite side when the patient turned over. In some it was perfectly apparent, and in others it amounted only to a small patch which might easily be overlooked unless the two sides were carefully and systematically compared. It was usually observed at about the level of the angle of the scapula, but it sometimes appeared nearer the base. In some of the patients this area of diminished resonance was found on one side, but did not appear on the opposite side when the patient was turned over. It was not affected by the position of the upper arm. It could be shifted or obliterated, in some instances, by rolling the patient a little more forward or backward. The explanation is believed to lie in the fact that when a person lies on the side there tends to develop a scoliosis due to sagging downward of the spine. This results in a spreading of the ribs on the lower side, giving rise to a relatively greater capacity and a tendency to hyperresonance on percussion. The tympanitic quality in the dull zone described by Vierordt is probably due to this factor. The ribs are crowded together on the upper side. The upper side expands less readily and presents to the percussing finger a greater rib surface and less intercostal surface. All this tends to a diminished resonance on percussion. An endeavor was made to compare the measurements of the chest on the two sides in the lateral position, but the sources of error were found to be too great to permit of accuracy.

The suggestion that the relative hyperresonance of the lower side is due to the reinforcement of the sound by the mattress was tested by percussing a patient who showed this phenomenon while in bed, when he was lying on a concrete floor. The side next to the floor was more resonant than the upper side whether in the right or left lateral position.

Many of the patients showed various combinations of the areas of diminished resonance and relative hyperresonance described, and in not a few the dulness was as great as that obtained over well marked areas of consolidation.

CONCLUSIONS

1. It will be seen that the asymmetry found in the percussion note over the back in the lateral recumbency may take the form of relative dulness over (*a*) a zone next the bed on the lower side; (*b*) the base of the lung on the lower side; (*c*) the whole lower side; (*d*) a patch on the upper side, or (*e*) various combinations of these areas of dulness, and that relative hyperresonance may be found on either the upper or the lower side.

2. The areas of dulness are sometimes definite enough to suggest consolidation.

3. It is recommended that before conclusions are drawn from percussion of the back of a patient who cannot safely or conveniently stand or sit up, the back should be percussed with the patient first on one side and then on the other, and the results carefully compared.

46 Sidney Place.

Clinical Notes, Suggestions, and New Instruments

FOREIGN BODY IN BRONCHI

ADRIAN W. VOEGELIN, M.D. PHILADELPHIA

The occurrence of cases such as the one herewith reported I believe to be of such exceptional rarity as to warrant their recording.

REPORT OF CASE

Tack situated low in the right bronchus.

J. C., a robust man, came to the Episcopal Hospital complaining of pain in the chest, and cough. He stated that on the afternoon of the preceding day, while holding several carpet tacks in his mouth, he had taken a breath to answer a question and had felt something slip down his "windpipe." This immediately gave rise to a fit of coughing, lasting fifteen minutes; but he remained at work thinking he had inhaled only some iron rust. That night he expectorated about three teaspoonfuls of blood and mucus; but he slept several hours.

At the hospital the following morning, stereoscopic roentgenograms of the chest revealed a tack lodged, point downward, in the *left* bronchus. No râles, indicating a localized bronchitis, or other unusual thoracic signs were detected.

The patient refused to remain in the hospital for treatment. At noon he had a violent attack of coughing with pain and dyspnea, and expectorated more blood-tinged mucus. That evening, a roentgen-ray examination by another roentgenologist revealed the tack situated low in the *right* bronchus and pointing upward, as shown in the accompanying illustration. The man went home, and early the next morning expectorated more phlegm and blood.—A few minutes later, after a slight fit of coughing, he put his hand to his mouth and without much effort obtained the offending tack, which had been in the air passages about thirty-six hours. No subsequent respiratory symptoms or abnormal physical signs have since appeared, and the patient is evidently none the worse for his unusual experience.

STATE BOARD STATISTICS FOR 1920

ANNUAL PRESENTATION BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION OF RESULTS OF STATE BOARD EXAMINATIONS

On pages 1232 to 1239 are three tables, A, B and C, giving in detail the results of the various state medical license examinations held during 1920. All state licensing boards sent in reports and the figures have been carefully verified.

Tables A and B, when read from left to right, show for each medical college named (*a*) the number of graduates appearing for examination in each state, (*b*) whether they passed or failed, (*c*) the total number examined during the year, (*d*) the number who passed, (*e*) the number who failed, (*f*) the percentage of failures, and (*g*) the number of states in which graduates of that school appeared for examination. Read from above downward, they give the results by states, showing (*h*) the number registered and rejected from each college, (*i*) the total numbers examined, registered and rejected, and (*j*) the percentage of rejections. The majority of graduates take the license examination in the state in which the college is located, as shown by the dark diagonal zone of figures passing from the upper left to the lower right corner of each table. These tables are worthy of careful study, since important deductions are possible. The marginal numbers will enable one to follow readily the line for any college.

Graduates of All Years Examined in 1920

Table A shows the results for all candidates who took examinations in 1920, regardless of the years in which they graduated. This shows that altogether 4,787 candidates were examined last year, as compared with 4,736 in 1919, 3,637 in 1918, 4,730 in 1917 and 4,850 in 1916. This year shows an increase of 51 since last year and 1,150 since 1918. Previous to 1919 there had been a steady decrease since 1906 owing chiefly to (*a*) the larger registration through reciprocity, and (*b*) the general diminution in the number of medical colleges, students and graduates. The marked decrease in 1918 was due to the enlistment of many physicians for military medical service. Of those examined in 1920, 15.3 per cent. failed, as compared with 13.3 in 1918, 14.1 per cent. in 1917 and 15 per cent. in 1916.

There were 78 medical colleges in the United States granting degrees in 1920 which had graduates examined, as compared with 79 in 1919, 80 in 1918 and 89 in 1917. There has been a decrease of 75 since 1905, when graduates from 153 medical colleges were examined. The statistics covering schools which have ceased to exist are included in the line for "miscellaneous colleges."

Graduates of Canadian schools were examined in 21 states. The largest number, 31, were examined in New York, the next largest number being 10 examined in Massachusetts. The figures for each college are given separately in order to show the number of candidates coming from each, and to show the successes of their graduates at the examinations. Altogether, 85 candidates from Canadian colleges were examined, of whom 21, or 24.7 per cent. failed.

Foreign granduates were examined in 24 states, the total examined being 86, and of this number 33, or 38.4 per cent., failed. In 1918, 45, and in 1919, 67 foreign graduates were examined. The largest number of foreigners examined in any state in 1920 was 19 in California, where 8, or 42.1 per cent., failed.

Caution in Forming Conclusions

In making comparisons on the basis of these statistics, the reader must keep in mind (*a*) the number of graduates examined; (*b*) the number of states in which a school's graduates have been examined; (*c*) the character of the board making the examination and the methods employed. Some boards refuse to examine graduates of inferior medical colleges, while others (see Table H) not only examine graduates of all medical colleges but also admit osteopaths to the physicians' and surgeons' examination. Some boards hold careful examinations which include practical laboratory and clinical tests, or they mark the papers more severely, while others, especially partisan boards, are very lenient. It is particularly important, in forming conclusions based on these statistics, to note for each college the states in which its graduates are not admitted to examination—information set forth with these statistics in Table D. A state board which admits to its examinations graduates of low-grade medical schools would be expected to have a higher percentage of failures.

Undergraduates and Osteopaths Examined During 1920

For the last three years the few undergraduates examined have been accidental instances due evidently to imperfect credentials. In 1906, there were 703 undergraduates examined, and 342 were licensed. Colorado is now the only state which will knowingly admit nongraduates to its examinations, but only six have been licensed in that state in fourteen years, two having failed at the examination this year. The door has been closed, therefore, against the admission to practice of those whose medical training is known to be incomplete. At present, however, several boards register as physicians and surgeons, by examination or by reciprocity, graduates of osteopathic colleges—no one of which compares favorably with the lowest grade Class C medical college—even though in two of these states—Colorado and Texas—the boards refuse to admit graduates of Class C medical schools to their examinations. (See Table D on page 1240 and 1241.)

During 1920, in California, 27 graduates of osteopathic colleges were admitted to the regular examination for licenses as physicians and surgeons, and of this number 12, or 44.4 per cent., were granted licenses. In Colorado, of 32 osteopaths examined, 17, or 53.1 per cent., were granted licenses as physicians and surgeons (see Tablets G and I). Two osteopaths each were so licensed in Oklahoma and Utah. Altogether 63 osteopaths were examined as physicians and of this number 33, or 52.3 per cent., passed.

Recent Graduates Examined During 1920

Table B gives the results for graduates of 1916 to 1920, inclusive, examined during 1920. This table is important, since it deals with recent graduates, and is, therefore, the fairest basis for comparison between colleges. Of all candidates examined in 1920, 3,984, or 83.2 per cent., were recent graduates, and of this number, 11.5 per cent. failed, as compared with 15.3 per cent. for all candidates.

Old Practitioners Examined During 1920

Table C is so arranged as to show in comparison the results for graduates of all years (first column), for recent graduates (second column), for graduates of 1915 and previous years (third column), and for graduates of 1920 (fourth column). Of the graduates of 1915 and previous years—"old practitioners" 738 were examined, and of this number 245, or 33.2 per cent., failed, as compared with 11.5 per cent. of failures for recent graduates. The total number of these candidates is diminishing each year as state licensing boards extend the provision for reciprocity, or for the endorsement, without further examination of licenses granted by other states where a physician's qualifications are otherwise satisfactory. As a rule, the states which do not have reciprocal relations with other states (Florida, Massachusetts, Montana and Oregon, see Table G) examined the largest numbers of old practitioners.

Graduates of 1920 Examined During 1920

Table C also gives the results for the graduates of 1920 who were examined during the year by the state boards, and shows that 2,559, or 53.7 per cent., of all candidates examined

(CONTINUED ON PAGE 1239)

Marginal Number	NAME OF COLLEGE	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	ALABAMA																																													
1	University of Alabama School of Medicine	10	0															1	0																											1
	ARKANSAS																																													
2	University of Arkansas Medical Department					3	0	1	0							2	0	0	2													1	0	2	0											2
	CALIFORNIA																																													
3	College of Medical Evangelists							13	0																																					3
4	College of Physicians and Surgeons, Los Angeles			2	0			12	4																																					4
5	College of Physicians and Surgs., San Francisco							16	5																																					5
6	Leland Stanford Junior Univ. School of Medicine							19	0																																					6
7	Oakland College of Medicine and Surgery							3	1																							1	0													7
8	University of California Medical School							19	0																																	1	0					8
	COLORADO																																													
9	University of Colorado School of Medicine							1	0	18	0													4	0																					9
	CONNECTICUT																																													
10	Yale University School of Medicine							1	0	1	0	17	1															1	0																	10
	DISTRICT OF COLUMBIA																																													
11	Georgetown University School of Medicine															16	0																							3	0	2	0			11
12	George Washington University Medical School							1	0							20	0																							2	0	2	0			12
13	Howard University School of Medicine	1	0											1	0	9	1	1	0					0	1	1	0											2	0					13
	GEORGIA																																													
14	Emory University School of Medicine	1	0									0	1					6	0	28	0																			0	2					14
15	University of Georgia Medical Department			1	0													2	0	15	0																			1	0					15
	ILLINOIS																																													
16	Chicago Medical School																							30	18							1	0							1	0					16
17	Hahnemann Medical College and Hospital			0	1																	0	1	8	1	1	0																	17
18	Loyola University School of Medicine											1	0			1	0							74	3	1	0	0	1			1	1							5	1	2	0			18
19	Northwestern University Medical School			3	0			2	0									1	0			3	0	62	0			2	0											1	0			3	0	19
20	Rush Medical College (University of Chicago)			2	0			4	0									2	0			2	0	123	0					3	0											1	0	20
21	University of Illinois College of Medicine			2	2			3	0									0	1			4	0	47	2	1	0	2	0											1	0	1	0	2	1	21
	INDIANA																																													
22	Indiana University School of Medicine							1	0									1	0							43	0													1	1					22
	IOWA																																													
23	State University of Iowa College of Medicine			1	0			1	0																			54	0											1	0					23
	KANSAS																																													
24	University of Kansas School of Medicine							1	0													1	0							23	0											1	0	24
	KENTUCKY																																													
25	University of Louisville Medical Department			0	2													1	1			1	1	1	0	4	0	1	0			22	1	1	0							0	2	25
	LOUISIANA																																													
26	Tulane University of Louisiana School of Med.	7	0	2	0	2	0									1	0	3	0															64	0					1	0	1	0			26
	MAINE																																													
27	Bowdoin Medical School											4	1																									7	0			4	0			27
	MARYLAND																																													
28	Johns Hopkins University Medical Department			1	0			1	1			7	0			1	0			2	0					1	0	1	0	1	0					1	0	50	2	1	0	1	0	1	0	28
29	Univ. of Md. School of Med. & Coll. of P. & S.			1	0			1	0			2	1			1	1					1	0											1	0			42	5	2	0					29
	MASSACHUSETTS																																													
30	Boston University School of Medicine			1	0							0	1					1	0																	1	0			9	0					30
31	College of Physicians and Surgeons, Boston																	1	1																					4	18					31
32	Medical School of Harvard University	1	0			1	0	3	0			9	2					2	0	1	0			3	0	2	0	2	0							10	0	1	0	54	0	2	0	5	0	32
33	Middlesex College of Medicine and Surgery.—N.																																							13	21					33
34	Tufts College Medical School			1	0							8	1							1	0															2	0			78	12					34
	MICHIGAN																																													
35	Detroit College of Medicine and Surgery																					1	0	1	1																	39	0			35
36	University of Michigan Medical School																									1	0											1	0	1	0	79	0			36
37	University of Michigan Homeo. Med. School.—H.																																								7	0			37
	MINNESOTA																																													
38	University of Minnesota Medical School							2	0							1	0					2	0	1	0																			69	0	38
	MISSOURI																																													
39	Kansas City College of Medicine and Surgery.—N.					22	21			2	1																																	39
40	Kansas City Univ. of Phys. and Surgs.—N.									5	1					1	0																											40
41	St. Louis College of Physicians and Surgeons			0	2					5	21																																	41
42	St. Louis University School of Medicine							2	0									2	0					7	1	1	0	3	0											1	0	2	0	1	0	42
43	Washington University School of Medicine			3	0	1	0	2	0			1	0			1	0							2	0	1	0											1	0	1	0	1	0			43
	NEBRASKA																																													
44	John A. Creighton Medical College			1	0																	1	0					1	0															44
45	University of Nebraska College of Medicine							1	0																			1	0											1	0			1	0	45
	NEW YORK																																													
46	Albany Medical College											4	0					1	1																									1	0			46
47	Columbia University College of Phys. & Surgs.			1	0	1	0					10	0			1	0	4	0	2	0	1	0							1	0									2	0			2	0	47
48	Cornell University Medical College															1	0											1	0																	48
49	Fordham University School of Medicine											6	0					1	0					1	0																					49
50	Long Island College Hospital																	0	1					1	0																			1	0	50
51	N. Y. Homeo. Med. Coll. and Flower Hosp.—H.							1	0			2	0															1	0											1	0					51
52	Syracuse University College of Medicine											1	0																																	52
53	University and Bellevue Hospital Med. Coll.											3	0					1	0																											53
54	University of Buffalo Medical Department			2	0							1	0									1	0																	1	0	3	0					54
	OHIO																																													
55	Eclectic Medical College.—E.									0	1									1	0											3	0									2	0			55
56	Ohio State University College of Medicine																							1	0																					56
57	Ohio State University Coll. of Homeo. Med.—H.																																													57
58	University of Cincinnati College of Medicine																									2	0																			58
59	Western Reserve University School of Medicine							1	0																																					59
	OKLAHOMA																																													
60	University of Oklahoma School of Medicine	1	0																															1	0											60
	OREGON																																													
61	University of Oregon Medical School							1	0													1	0																							61
	PENNSYLVANIA																																													
62	Hahnemann Medical College and Hospital.—H.											1	0																																	62
63	Jefferson Medical College	2	0	2	0	1	0	2	0	1	0	9	1					2	0	2	0	2	0	1	0			1	0									2	0	5	0			1	0	63
64	Temple University Department of Medicine													3	2																							0	2	1	0	1	0			64
65	University of Pennsylvania School of Medicine	1	0	0	1			1	0			2	0	2	1	1	0	3	0			1	0	2	0					1	0			2	0			1	0	2	0	2	0	2	0	65
66	University of Pittsburgh School of Medicine							1	0																					1	0													66
67	Woman's Medical College of Pennsylvania											1	1																											1	0					67
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																							

H = Homeopathic; E = Eclectic; N = Nondescript; P = Passed; F = Failed.

| Marginal Number | 23 Mississippi | | 24 Missouri | | 25 Montana | | 26 Nebraska | | 27 Nevada | | 28 New Hampshire | | 29 New Jersey | | 30 New Mexico | | 31 New York | | 32 North Carolina | | 33 North Dakota | | 34 Ohio | | 35 Oklahoma | | 36 Oregon | | 37 Pennsylvania | | 38 Rhode Island | | 39 South Carolina | | 40 South Dakota | | 41 Tennessee | | 42 Texas | | 43 Utah | | 44 Vermont | | 45 Virginia | | 46 Washington | | 47 West Virginia | | 48 Wisconsin | | 49 Wyoming | | 50 U. S. Territories and Possessions | | Totals | Examined—Passed | Examined—Failed | Percentage of Failures | No. States Exam. in | Marginal Number |
|---|---|---

Marginal Number	NAME OF COLLEGE	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	1	4 California P	1	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	SOUTH CAROLINA																																													
68	Medical College of the State of South Carolina																	1	0																												68
	TENNESSEE																																														
69	Meharry Medical College	1	1			4	7					0	2			1	1	3	0	12	4			6	28			1	0			0	2	1	2			1	1	1	2							69
70	University of Tennessee College of Medicine			1	0	7	0															2	0											1	0							1	0					70
71	University of West Tennessee Medical Department									1	3							1	0																													71
72	Vanderbilt University School of Medicine	2	0	2	0			1	0	1	0	1	0					1	0	1	0					1	0					1	0	2	0											72
	TEXAS																																														
73	Baylor University College of Medicine									0	1	1	1																																			73
74	University of Texas Department of Medicine							1	0									1	0													1	0			1	0											74
	VERMONT																																														
75	University of Vermont College of Medicine							1	0			1	1					2	0																							5	1					75
	VIRGINIA																																														
76	Medical College of Virginia	1	0									0	5					2	0																					1	0					76
77	University of Virginia Departmentof Medicine			1	0											1	0													1	0			1	0			2	0	1	0					77
	WISCONSIN																																														
78	Marquette University School of Medicine			1	0			1	0																																					78
	CANADA																																														
79	Laval University Faculty of Medicine																																							1	2					79
80	McGill University Faculty of Medicine							3	0							1	0							1	0									3	0	1	0	1	0					80
81	Queen's University Faculty of Medicine			1	0																			1	0															1	1					81
82	University of Manitoba Faculty of Medicine																																													82
83	University of Montreal Medical Faculty									0	2																									0	1			0	2					83
84	University of Toronto Faculty of Medicine	1	0					2	0															3	0															1	0	7	0			84
85	Western University Faculty of Medicine																																							1	0	1	0			85
86	Foreign Colleges							11	8	1	0	0	1					1	0			1	0	6	0					1	1			1	0					1	2	3	0			86
87	Miscellaneous Medical Colleges	5	1	2	6	6	0	1	0	4	1	4	4			1	2	24	11	5	2	2	0	17	11	1	0	3	1	0	1			3	0			0	1	3	9	6	2			87
88	Undergraduates and Osteopaths							12	15	17	17																																			88
89	Totals by States	36		47		76		184		102		123		9		66		90		76		29		470		64		78		34		34		83		25		118		286		163		94		89
90	Totals — Examined — Passed	34		33		48		150		56		97		6		61		72		70		27		404		64		76		32		30		81		24		107		217		161		90		90
91	Totals — Examined — Failed	2		14		28		34		46		26		3		5		18		6		2		66		0		2		2		4		2		1		11		69		2		4		91
92	Percentage of Failures	5.6		29.8		36.8		18.5		45.1		21.1		33.3		7.6		20.0		7.9		6.9		14.0		0.0		2.6		5.9		11.8		2.4		4.0		9.3		24.1		1.2		4.3		92
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H. = Homeopathic; E = Eclectic; N = Nondescript; P = Passed; F = Failed.

TABLE B—GRADUATES OF 1916 TO 1920, INCLUSIVE,

Marginal Number	NAME OF COLLEGE	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	ALABAMA																																														
1	University of Alabama School of Medicine	10	0																																												1
	ARKANSAS																																														
2	University of Arkansas Medical Department					3	0	1	0							2	0															1	0	1	0											2
	CALIFORNIA																																														
3	College of Medical Evangelists							13	0																																						3
4	College of Physicians and Surgeons, Los Angeles			2	0			12	4																																						4
5	College of Physicians and Surgs., San Francisco							16	5																																					5
6	Leland Stanford Junior Univ. School of Medicine							19	0																																					6
7	Oakland College of Medicine and Surgery							3	1																											1	0									7
8	University of California Medical School							19	0																																	1	0					8
	COLORADO																																														
9	University of Colorado School of Medicine							1	0	18	0													2	0																							9
	CONNECTICUT																																														
10	Yale University School of Medicine							1	0			17	1																																			10
	DISTRICT OF COLUMBIA																																														
11	Georgetown University School of Medicine															16	0																									1	0	2	0			11
12	George Washington University Medical School							1	0							20	0																							1	0	1	0					12
13	Howard University School of Medicine	1	0											1	0	9	1	1	0							1	0											2	0							13
	GEORGIA																																														
14	Emory University School of Medicine	1	0															5	0	28	0																			0	2					14
15	University of Georgia Medical Department																	2	0	15	0																									15
	ILLINOIS																																														
16	Chicago Medical School																							29	16									1	0					1	0					16
17	Hahnemann Medical College and Hospital																							8	1	1	0																			17
18	Loyola University School of Medicine											1	0			1	0							74	3	1	0	0	1			1	1							5	1	2	0			18
19	Northwestern University Medical School			3	0			2	0													1	0	62	0			2	0											1	0			3	0	19
20	Rush Medical College (University of Chicago)							4	6													2	0	122	0					3	0													1	0	20
21	University of Illinois College of Medicine							3	0													2	0	47	2	1	0	2	0													1	0	1	0	21
	INDIANA																																														
22	Indiana University School of Medicine							1	0									1	0							43	0													1	1					22
	IOWA																																														
23	State University of Iowa College of Medicine							1	0																			54	0													1	0					23
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H. = Homeopathic; E = Eclectic; N = Nondescript; P = Passed; F = Failed.

| Marginal Number | 23 Mississippi | | 24 Missouri | | 25 Montana | | 26 Nebraska | | 27 Nevada | | 28 New Hampshire | | 29 New Jersey | | 30 New Mexico | | 31 New York | | 32 North Carolina | | 33 North Dakota | | 34 Ohio | | 35 Oklahoma | | 36 Oregon | | 37 Pennsylvania | | 38 Rhode Island | | 39 South Carolina | | 40 South Dakota | | 41 Tennessee | | 42 Texas | | 43 Utah | | 44 Vermont | | 45 Virginia | | 46 Washington | | 47 West Virginia | | 48 Wisconsin | | 49 Wyoming | | 50 U. S. Territories and Possessions | | Totals | Examined—Passed | Examined—Failed | Percentage of Failures | No. States Exam. in | Marginal Number |
|---|---|---

Marginal Number	NAME OF COLLEGE	1 Alabama		2 Arizona		3 Arkansas		4 California		5 Colorado		6 Connecticut		7 Delaware		8 Dist. Columbia		9 Florida		10 Georgia		11 Idaho		12 Illinois		13 Indiana		14 Iowa		15 Kansas		16 Kentucky		17 Louisiana		18 Maine		19 Maryland		20 Massachusetts		21 Michigan		22 Minnesota		Marginal Number
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	
	KANSAS																																											
24	University of Kansas School of Medicine	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	23	0	..	..	..	..	..	..	..	..	..	..	..	..	1	0	24
	KENTUCKY																																											
25	University of Louisville Medical Department	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	1	0	4	0	..	..	..	..	22	1	1	0	..	..	..	..	..	..	..	..	25
	LOUISIANA																																										
26	Tulane University of Louisiana School of Med.	7	0	1	0	2	0	..	..	..	..	..	..	..	..	..	..	3	0	..	..	..	..	..	..	..	..	..	..	..	..	63	0	..	..	..	..	1	0	1	0	..	..	26
	MAINE																																										
27	Bowdoin Medical School	..	..	..	..	..	..	..	..	..	..	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	0	..	..	3	0	..	..	..	..	27
	MARYLAND																																										
28	Johns Hopkins University Medical Department	..	..	..	..	..	..	1	1	..	..	6	0	..	..	1	0	..	..	2	0	..	..	..	..	1	0	1	0	1	0	..	..	..	..	1	0	48	2	..	..	1	0	1	0	28
29	Univ. of Md. School of Med. & Coll. of P. & S	..	..	..	..	..	..	1	0	..	..	2	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	41	5	1	0	..	..	..	..	29
	MASSACHUSETTS																																										
30	Boston University School of Medicine	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	9	0	..	..	..	..	30
31	College of Physicians and Surgeons, Boston	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	13	..	..	..	..	31
32	Medical School of Harvard University	1	0	..	..	1	0	3	0	..	..	7	0	..	..	..	..	..	..	1	0	..	..	3	0	2	0	1	0	..	..	..	..	..	..	6	0	..	..	50	0	2	0	2	0	32
33	Middlesex College of Medicine and Surgery.—N.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	21	..	..	..	..	33
34	Tufts College Medical School	..	..	..	..	..	..	..	..	..	..	8	1	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	75	12	..	..	..	..	34
	MICHIGAN																																										
35	Detroit College of Medicine and Surgery	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	39	0	..	..	35
36	University of Michigan Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	0	79	0	..	..	36
37	University of Michigan Homeo. Med. School.—H.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	0	..	..	37
	MINNESOTA																																											
38	University of Minnesota Medical School	..	..	..	..	..	..	2	0	..	..	..	..	..	..	1	0	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	69	0	38
	MISSOURI																																										
39	Kansas City College of Medicine and Surgery.—N.	..	..	..	..	22	21	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	39
40	Kansas City Univ. of Phys. and Surgs.—N.	..	..	..	..	..	..	..	..	5	1	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40
41	St. Louis College of Physicians and Surgeons	..	..	6	2	..	..	..	..	5	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	41
42	St. Louis University School of Medicine	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	1	1	0	3	0	..	..	..	..	..	..	..	..	..	..	1	0	2	0	1	0	42
43	Washington University School of Medicine	..	..	1	0	..	..	2	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	2	0	1	0	..	..	..	..	..	..	..	..	..	..	1	0	..	..	1	0	..	..	43
	NEBRASKA																																											
44	John A. Creighton Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44
45	University of Nebraska College of Medicine	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	45
	NEW YORK																																										
46	Albany Medical College	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	46
47	Columbia University College of Phys. & Surgs.	..	..	1	0	1	0	..	..	..	..	5	0	..	..	..	..	1	0	2	0	1	0	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	1	0	..	..	2	0	47
48	Cornell University Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	48
49	Fordham University School of Medicine	..	..	..	..	..	..	..	..	..	..	6	0	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Long Island College Hospital	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50
51	N. Y. Homeo. Med. Coll. and Flower Hosp.—H.	..	..	..	..	..	..	1	0	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	51
52	Syracuse University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52
53	University and Bellevue Hospital Med. Coll.	..	..	..	..	..	..	..	..	..	..	3	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	..	..	..	..	53
54	University of Buffalo Medical Department	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	54
	OHIO																																											
55	Eclectic Medical College.—E.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	1	0	3	0	..	..	..	..	3	0	..	..	..	..	..	..	..	..	2	0	..	..	55
56	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	56
57	Ohio State University Coll. of Homeo. Med.—H.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	57
58	University of Cincinnati College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58
59	Western Reserve University School of Medicine	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	59
	OKLAHOMA																																											
60	University of Oklahoma School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	60
	OREGON																																											
61	University of Oregon Medical School	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	61
	PENNSYLVANIA																																										
62	Hahnemann Medical College and Hospital.—H.	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62
63	Jefferson Medical College	2	0	..	..	..	..	2	0	..	..	8	1	..	..	..	..	..	..	2	0	1	0	1	0	..	..	1	0	..	..	..	..	..	..	..	..	2	0	5	0	..	..	1	0	63
64	Temple University Department of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	2	1	0	1	0	..	..	64
65	University of Pennsylvania School of Medicine	..	..	..	..	..	..	1	0	..	..	2	0	2	1	1	0	..	..	..	..	1	0	2	0	..	..	..	..	1	0	..	..	2	0	..	..	1	0	2	0	2	0	2	0	65
66	University of Pittsburgh School of Medicine	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	66
67	Woman's Medical College of Pennsylvania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	67
	SOUTH CAROLINA																																											
68	Medical College of the State of South Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	68
	TENNESSEE																																											
69	Meharry Medical College	1	1	..	..	3	4	..	..	..	..	0	1	..	..	1	1	3	0	11	3	..	..	3	8	..	..	..	..	..	..	..	..	0	2	1	2	..	..	1	1	..	..	..	..	69
70	University of Tennessee College of Medicine	..	..	1	0	7	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	70
71	University of West Tennessee Medical Department	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	71
72	Vanderbilt University School of Medicine	2	0	1	0	..	..	..	..	1	0	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	2	0	..	..	..	..	..	..	..	..	72
	TEXAS																																											
73	Baylor University College of Medicine	..	..	..	..	..	..	..	..	0	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	73
74	University of Texas Department of Medicine	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	74
	VERMONT																																											
75	University of Vermont College of Medicine	..	..	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	1	..	..	..	..	75
	VIRGINIA																																											
76	Medical College of Virginia	1	0	..	..	..	..	..	..	..	..	0	5	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	76
77	University of Virginia Departmentof Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	1	0	..	..	2	0	1	0	..	..	..	..	77
	WISCONSIN																																											
78	Marquette University School of Medicine	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	78
	CANADA																																											
79	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	79
80	McGill University Faculty of Medicine	..	..	..	..	..	..	1	0	..	..	..	..	..	..	1	0	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	3	0	..	..	1	0	..	..	..	..	80
81	Queen's University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	81
82	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82
83	University of Montreal Medical Faculty	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	0	1	..	..	83
84	University of Toronto Faculty of Medicine	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	84
85	Western University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	85
86	Foreign Colleges	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	..	..	..	..	..	..	..	..	1	0	..	..	..	..	1	0	..	..	..	..	86
87	Miscellaneous Medical Colleges	..	..	0	1	4	0	..	..	1	0	..	..	..	..	..	..	..	..	1	0	..	..	5	2	..	..	0	1	..	..	..	..	..	..	..	..	..	..	0	3	6	2	..	..	87
88	Undergraduates and Osteopaths	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	88
89	Totals by States	28		16		68		134		59		92		9		60		21		67		13		411		62		70		31		34		76		21		109		250		155		85		89
90	Totals — Examined — Passed	27		13		43		122		32		77		6		57		21		64		13		378		62		68		31		30		74		20		99		192		153		85		90
91	Totals — Examined — Failed	1		3		25		12		27		15		3		3		0		3		0		32		0		2		0		4		2		1		10		58		2		0		91
92	Percentage of Failures	3.6		18.7		36.8		9.0		45.8		16.3		33.3		5.0		0.0		4.5		0.0		8.0		0.0		2.9		0.0		11.8		2.6		4.8		9.2		23.2		1.3		0.0		92
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

H = Homeopathic; E = Eclectic; N = Nondescript; P = Passed; F = Failed.

Marginal Number	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Totals	Examined—Passed	Examined—Failed	Percentage of Failures	No. States Exam. in	Marginal Number
	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Territories and Possessions					
	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
24	. .	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	28	28	0	0.0	6	24
25	. .	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	36	33	3	8.3	10	25
26	12 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	5 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	100	100	0	0.0	13	26
27	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	15	14	1	6.7	3	27
28	.. ..	1 0	1 0	1 0	.. ..	.. ..	.. ..	.. ..	19 5	2 0	1 0	4 0	.. ..	2 0	8 0	1 0	2 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	3 0	.. ..	2 0	1 0	1 1	123	114	9	7.3	27	28
29	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	3 0	.. ..	4 4	7 0	.. ..	1 0	.. ..	.. ..	4 0	1 0	3 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	10 0	.. ..	.. ..	5 0	96	85	11	11.5	15	29
30	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	16	12	4	25.0	8	30
31	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	17	4	13	76.5	1	31
32	.. ..	2 0	.. ..	.. ..	.. ..	3 0	1 0	.. ..	14 2	1 0	.. ..	2 0	.. ..	.. ..	4 0	4 0	1 0	.. ..	1 0	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	115	113	2	1.7	23	32
33	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	34	13	21	61.8	1	33
34	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	5 5	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	7 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	121	102	19	15.7	9	34
35	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	47	44	3	6.4	5	35
36	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	4 1	.. ..	.. ..	.. ..	.. ..	.. ..	3 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	92	91	1	1.1	8	36
37	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	11	10	1	9.1	2	37
38	.. ..	.. ..	3 0	.. ..	.. ..	.. ..	.. ..	.. ..	2 1	.. ..	3 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	83	82	1	1.2	8	38
39	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	48	26	22	45.8	3	39
40	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	10	8	2	20.0	4	40
41	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	1 0	.. ..	1 0	.. ..	40	11	29	72.5	8	41
42	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	68	67	1	1.5	11	42
43	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	46	45	1	2.2	12	43
44	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	24	23	1	4.2	4	44
45	.. ..	.. ..	.. ..	4 0	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	10	10	0	0.0	7	45
46	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	24 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..						
47	.. ..	1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	88 18	1 0	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	.. ..	1 0	3 0	1 0	.. ..	.. ..	2 0	.. ..	2 0	.. ..	.. ..	31	28	3	9.7	4	46
48	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	52 8	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	136	118	18	13.2	20	47
49	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	55 17	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	1 0	64	56	8	12.5	5	48
50	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	78 11	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	79	62	17	21.5	3	49
51	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	40 29	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	91	80	11	12.1	3	50
52	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	33 4	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	75	46	29	38.7	5	51
53	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	109 7	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	38	34	4	10.5	2	52
54	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	52 4	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	124	117	7	5.6	5	53
55	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	7 6	.. ..	.. ..	24 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	59	55	4	6.8	3	54
56	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	22 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	49	41	8	16.3	8	55
57	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	23	23	0	0.0	2	56
58	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	40 0	.. ..	.. ..	1 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	2	1	1	50.0	1	57
59	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	46 0	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	3 0	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	48	48	0	0.0	7	58
60	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	1 0	1 0	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	52	52	0	0.0	5	59
61	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	19 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6	5	1	16.7	6	60
62	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5 0	.. ..	1 4	.. ..	.. ..	1 0	.. ..	1 0	23 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	24	23	1	4.2	5	61
63	1 0	2 0	.. ..	.. ..	.. ..	.. ..	6 0	.. ..	7 4	26 0	.. ..	9 0	.. ..	.. ..	86 3	.. ..	2 0	.. ..	2 0	.. ..	2 0	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	39	34	5	12.8	7	62
64	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	15 13	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	5 0	.. ..	1 0	186	178	8	4.3	24	63
65	1 0	2 0	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	30 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	38	21	17	44.7	6	64
66	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	8 0	.. ..	5 3	8 0	.. ..	4 0	.. ..	1 2	77 2	.. ..	.. ..	.. ..	.. ..	1 0	1 0	.. ..	4 0	.. ..	3 0	4 0	.. ..	1 0	148	140	8	5.4	27	65
67	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	0 1	1 0	.. ..	1 0	.. ..	.. ..	5 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	36	36	0	0 0	6	66
68	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	14 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	8	7	1	12.5	4	67
69	3 0	10 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 1	.. ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	14	14	0	0.0	1	68
70	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	21 0	.. ..	.. ..	.. ..	.. ..	1 4	.. ..	.. ..	.. ..	90	61	29	32.2	16	69
71	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	7 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	19	19	0	0.0	6	70
72	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 1	1 0	.. ..	3 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	28 0	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3	0	3	100.0	1	71
73	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	45	44	1	2.2	11	72
74	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	25 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	29	26	3	10.3	4	73
75	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 1	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	62 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	60	68	1	1.4	7	74
76	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5 10	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	16 0	.. ..	.. ..	.. ..	.. ..	.. ..	38	27	11	28.9	5	75
77	5 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	6 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	23 3	.. ..	3 1	.. ..	.. ..	49	40	9	18.4	8	76
78	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	13 0	.. ..	2 0	.. ..	.. ..	24	24	0	0.0	9	77
79	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	14 0	.. ..	.. ..	16	16	0	0.0	3	78
80	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5	1	4	80.0	2	79
81	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 0	.. ..	.. ..	.. ..	.. ..	16	13	3	18.7	7	80
82	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	7 2	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	13	10	3	23.1	4	81
83	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0	0	0	0.0	0	82
84	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	4	0	4	100.0	3	83
85	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	3 2	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	11	9	2	18.2	6	84
86	.. ..	.. ..	1 0	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0	0	0	0.0	0	85
87	0 1	0 1	1 0	.. ..	.. ..	.. ..	2 0	1 0	3 1	2 0	1 1	1 1	1 0	1 3	4 1	.. ..	.. ..	1 0	.. ..	1 0	.. ..	.. ..	1 0	.. ..	2 0	2 1	.. ..	2 0	22	16	6	27.3	10	86
88	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	0 3	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	59	38	21	35.6	25	87
89	27	111	18	26	5	6	30	2	833	62	14	178	8	44	294	20	27	18	66	102	15	16	54	18	43	39	5	26	0	0	0	0.0	0	88
90	26	106	17	26	4	6	30	2	651	67	12	173	8	36	268	17	26	18	66	102	14	16	51	16	37	38	5	22	3984	....	....	....	....	89
91	1	5	1	0	1	0	0	0	182	1	2	5	0	8	26	3	1	0	0	0	.	0	3	2	6	1	0	4	3527	....	....	....	....	90
92	3.7	4.5	5.6	0.0	20.0	0.0	0.0	0.0	21.8	1.5	14.3	2.8	0.0	18.2	8.8	15.0	3.7	0.0	0.0	0.0	6.7	0.0	5.6	11.1	14.0	2.6	0.0	15.4	....	....	....	11.5	....	92
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						

Marginal Number	NAME OF COLLEGE	Graduates of All Years					Graduates of 1916-1920					Graduates of 1915 and Previous					Graduates of 1920					Marginal Number
		Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	
	ALABAMA																					
1	University of Alabama School of Medicine	11	11	0	0.0	2	10	10	0	0.0	1	1	1	0	0.0	1	9	9	0	0.0	1	1
	ARKANSAS																					
2	University of Arkansas Medical Department	11	9	2	18.2	6	8	8	0	0.0	5	3	1	2	66.7	2	6	6	0	0.0	4	2
	CALIFORNIA																					
3	College of Medical Evangelists	15	15	0	0.0	2	15	15	0	0.0	2	0	0	0	0.0	0	14	14	0	0.0	2	3
4	College of Physicians and Surgeons, Los Angeles	20	16	4	20.0	4	19	15	4	21.1	3	1	1	0	0.0	1	10	8	2	20.0	1	4
5	College of Physicians and Surgs., San Francisco	22	17	5	22.7	2	22	17	5	22.7	2	0	0	0	0.0	0	15	14	1	6.7	1	5
6	Leland Stanford Junior Univ. School of Medicine	20	20	0	0.0	2	20	20	0	0.0	2	0	0	0	0.0	0	18	18	0	0.0	2	6
7	Oakland College of Medicine and Surgery	5	4	1	20.0	2	5	4	1	20.0	2	0	0	0	0.0	0	5	4	1	20.0	2	7
8	University of California Medical School	21	21	0	0.0	3	20	20	0	0.0	2	1	1	0	0.0	1	20	20	0	0.0	2	8
	COLORADO																					
9	University of Colorado School of Medicine	26	26	0	0.0	6	23	23	0	0.0	5	3	3	0	0.0	1	19	19	0	0.0	2	9
	CONNECTICUT																					
10	Yale University School of Medicine	30	26	4	13.3	7	28	24	4	14.3	5	2	2	0	0.0	2	19	18	1	5.3	3	10
	DISTRICT OF COLUMBIA																					
11	Georgetown University School of Medicine	31	28	3	9.7	10	25	24	1	4.0	8	6	4	2	33.3	3	13	13	0	0.0	4	11
12	George Washington University Medical School	38	36	2	5.3	15	33	33	0	0.0	13	5	3	2	40.0	5	21	21	0	0.0	5	12
13	Howard University School of Medicine	39	27	12	30.8	13	31	24	7	22.6	12	8	3	5	62.5	3	8	6	2	25.0	5	13
	GEORGIA																					
14	Emory University School of Medicine	46	42	4	8.7	10	41	39	2	4.9	8	5	3	2	40.0	5	35	33	2	5.7	6	14
15	University of Georgia Medical Department	24	24	0	0.0	8	19	19	0	0.0	4	5	5	0	0.0	5	19	19	0	0.0	4	15
	ILLINOIS																					
16	Chicago Medical School	50	32	18	36.0	3	47	31	16	34.0	3	3	1	2	66.7	1	21	17	4	19.0	1	16
17	Hahnemann Medical College and Hospital	19	14	5	26.3	11	12	11	1	8.3	4	7	3	4	57.1	7	10	9	1	10.0	2	17
18	Loyola University School of Medicine	105	95	10	9.5	17	105	95	10	9.5	17	0	0	0	0.0	0	68	67	1	1.5	3	18
19	Northwestern University Medical School	103	97	6	5.8	19	95	92	3	3.2	17	8	5	3	37.5	4	17	17	0	0.0	10	19
20	Rush Medical College (University of Chicago)	181	179	2	1.1	18	164	162	2	1.2	16	17	17	0	0.0	9	135	134	1	0.7	11	20
21	University of Illinois College of Medicine	94	83	11	11.7	20	75	71	4	5.3	14	19	12	7	36.8	10	61	59	2	3.3	9	21
	INDIANA																					
22	Indiana University School of Medicine	49	47	2	4.1	6	47	46	1	2.1	4	2	1	1	50.0	2	39	39	0	0.0	1	22
	IOWA																					
23	State University of Iowa College of Medicine	64	63	1	1.6	8	58	58	0	0.0	5	6	5	1	16.7	4	55	55	0	0.0	3	23
	KANSAS																					
24	University of Kansas School of Medicine	29	29	0	0.0	7	28	28	0	0.0	6	1	1	0	0.0	1	23	23	0	0.0	2	24
	KENTUCKY																					
25	University of Louisville Medical Department	59	42	17	28.8	20	36	33	3	8.3	10	23	9	14	60.7	12	27	28	1	3.4	7	25
	LOUISIANA																					
26	Tulane University of Louisiana School of Med.	106	105	1	0.9	15	100	100	0	0.0	13	6	5	1	16.7	6	88	88	0	0.0	7	26
	MAINE																					
27	Bowdoin Medical School	17	16	1	5.9	4	15	14	1	6.7	3	2	2	0	0.0	2	12	11	1	8.3	3	27
	MARYLAND																					
28	Johns Hopkins University Medical Department	135	125	10	7.4	31	123	114	9	7.3	27	12	11	1	8.3	10	66	62	4	6.1	12	28
29	Univ. of Md. School of Med. & Coll. of P. & S.	109	95	14	12.8	21	96	85	11	11.5	15	13	10	3	23.1	11	59	53	6	10.2	9	29
	MASSACHUSETTS																					
30	Boston University School of Medicine	20	14	6	30.0	9	16	12	4	25.0	8	4	2	2	50.0	3	11	9	2	18.2	4	30
31	College of Physicians and Surgeons, Boston	20	6	14	70.0	3	17	4	13	76.5	1	3	2	1	33.3	2	15	3	12	80.0	1	31
32	Medical School of Harvard University	148	143	5	3.4	29	115	113	2	1.7	23	33	30	3	9.1	16	73	73	0	0.0	15	32
33	Middlesex College of Medicine and Surgery.—N.	34	13	21	61.8	1	34	13	21	61.8	1	0	0	0	0.0	0	18	9	9	50.0	1	33
34	Tufts College Medical School	131	109	22	16.8	13	121	102	19	15.7	9	10	7	3	30.0	6	90	79	11	12.2	5	34
	MICHIGAN																					
35	Detroit College of Medicine and Surgery	49	45	4	8.2	6	47	44	3	6.4	5	2	1	1	50.0	1	41	41	0	0.0	3	35
36	University of Michigan Medical School	96	94	2	2.1	10	92	91	1	1.1	8	4	3	1	25.0	3	80	80	0	0.0	5	36
37	University of Michigan Homeo. Med. School.—H.	12	11	1	8.3	3	11	10	1	9.1	2	1	1	0	0.0	1	7	7	0	0.0	1	37
	MINNESOTA																					
38	University of Minnesota Medical School	87	86	1	1.1	9	83	82	1	1.2	8	4	4	0	0.0	3	66	66	0	0.0	5	38
	MISSOURI																					
39	Kansas City College of Medicine and Surgery.—N.	48	26	22	45.8	3	48	26	22	45.8	3	0	0	0	0.0	0	44	23	21	47.7	2	39
40	Kansas City Univ. of Phys. and Surgs.—N.	10	8	2	20.0	4	10	8	2	20.0	4	0	0	0	0.0	0	4	3	1	25.0	2	40
41	St. Louis College of Physicians and Surgeons	42	13	29	69.0	9	40	11	29	72.5	8	2	2	0	0.0	2	21	4	17	81.0	3	41
42	St. Louis University School of Medicine	72	71	1	1.4	14	68	67	1	1.5	11	4	4	0	0.0	3	61	60	1	1.6	7	42
43	Washington University School of Medicine	51	50	1	2.0	16	46	45	1	2.2	12	5	5	0	0.0	5	31	31	0	0.0	5	43
	NEBRASKA																					
44	John A. Creighton Medical College	27	26	1	3.7	7	24	23	1	4.2	4	3	3	0	0.0	3	21	21	0	0.0	2	44
45	University of Nebraska College of Medicine	11	11	0	0.0	8	10	10	0	0.0	7	1	1	0	0.0	1	2	2	0	0.0	2	45
	NEW YORK																					
46	Albany Medical College	35	31	4	11.4	5	31	28	3	9.7	4	4	3	1	25.0	3	21	21	0	0.0	1	46
47	Columbia University College of Phys. & Surgs.	153	135	18	11.8	23	136	118	18	13.2	20	17	17	0	0.0	8	69	64	5	7.2	6	47
48	Cornell University Medical College	66	58	8	12.1	6	64	56	8	12.5	5	2	2	0	0.0	2	44	40	4	9.1	1	48
49	Fordham University School of Medicine	87	67	20	23.0	4	79	62	17	21.5	3	8	5	3	37.5	2	52	44	8	15.4	2	49
50	Long Island College Hospital	95	83	12	12.6	6	91	80	11	12.1	3	4	3	1	25.0	4	76	67	9	11.8	1	50
51	N. Y. Homeo. Med. Coll. and Flower Hosp.—H.	85	50	35	41.2	7	75	46	29	38.7	5	10	4	6	60.0	3	38	29	9	23.7	3	51
52	Syracuse University College of Medicine	39	35	4	10.3	3	38	34	4	10.5	2	1	1	0	0.0	1	37	33	4	10.8	1	52
53	University and Bellevue Hospital Med. Coll.	130	123	7	5.4	8	124	117	7	5.6	5	6	6	0	0.0	4	104	101	3	2.9	3	53
54	University of Buffalo Medical Department	63	58	5	7.9	6	59	55	4	6.8	3	4	3	1	25.0	4	56	52	4	7.1	1	54
	OHIO																					
55	Eclectic Medical College.—E.	52	41	11	21.1	9	49	41	8	16.3	8	3	0	3	100.0	2	45	38	7	15.6	7	55
56	Ohio State University College of Medicine	23	23	0	0.0	2	23	23	0	0.0	2	0	0	0	0.0	0	23	23	0	0.0	2	56
57	Ohio State University Coll. of Homeo. Med.—H.	2	1	1	50.0	1	2	1	1	50.0	1	0	0	0	0.0	0	1	1	1	50.0	1	57
58	University of Cincinnati College of Medicine	49	49	0	0.0	8	48	48	0	0.0	7	1	1	0	0.0	1	42	42	0	0.0	2	58
59	Western Reserve University School of Medicine	52	52	0	0.0	5	52	52	0	0.0	5	0	0	0	0.0	0	47	47	0	0.0	2	59
	OKLAHOMA																					
60	University of Oklahoma School of Medicine	8	6	2	25.0	8	6	5	1	16.7	6	2	1	1	50.0	2	2	2	0	0.0	2	60
	OREGON																					
61	University of Oregon Medical School	25	24	1	4.0	5	24	23	1	4.2	5	1	1	0	0.0	1	11	10	1	9.1	2	61
	PENNSYLVANIA																					
62	Hahnemann Medical College and Hospital.—H.	40	35	5	12.5	7	39	34	5	12.8	7	1	1	0	0.0	1	6	3	3	50.0	3	62
63	Jefferson Medical College	210	198	12	5.7	31	186	178	8	4.3	24	24	20	4	16.7	15	52	52	0	0.0	13	63
64	Temple University Department of Medicine	38	21	17	44.7	6	38	21	17	44.7	6	0	0	0	0.0	0	2	2	0	0.0	2	64
65	University of Pennsylvania School of Medicine	160	149	11	6.9	30	148	140	8	5.4	27	12	9	3	25.0	7	24	24	0	0.0	13	65
66	University of Pittsburgh School of Medicine	36	36	0	0.0	6	36	36	0	0.0	6	0	0	0	0.0	0	1	1	0	0.0	1	66
67	Woman's Medical College of Pennsylvania	12	9	3	25.0	6	8	7	1	12.5	4	4	2	2	50.0	3	1	1	0	0.0	1	67

Marginal Number	NAME OF COLLEGE	Graduates of All Years					Graduates of 1916-1920					Graduates of 1915 and Previous					Graduates of 1920					Marginal Number
		Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	Number Examined	Number Passed	Number Failed	Per Cent. Failed	Number of States	
	SOUTH CAROLINA																					
68	Medical College of the State of South Carolina	16	16	0	0.0	2	14	14	0	0.0	1	2	2	0	0.0	2	14	14	0	0.0	1	68
	TENNESSEE																					
69	Meharry Medical College	129	70	59	45.8	20	90	61	29	32.2	16	39	9	30	77.0	11	61	49	12	19.7	12	69
70	University of Tennessee College of Medicine	25	24	1	4.0	10	19	19	0	0 0	6	6	5	1	16.7	5	15	15	0	0.0	3	70
71	University of West Tennessee Medical Department	9	4	5	55.6	5	3	0	3	100.0	1	6	4	2	33.3	5	0	0	0	0.0	0	71
72	Vanderbilt University School of Medicine	62	53	9	14.5	16	45	44	1	2.2	11	17	9	8	47.1	8	35	35	0	0.0	7	72
	TEXAS																					
73	Baylor University College of Medicine	29	26	3	10.3	4	29	26	3	10.3	4	0	0	0	0.0	0	28	25	3	10.7	4	73
74	University of Texas Department of Medicine	70	69	1	1.4	8	69	68	1	1.4	7	1	1	0	0.0	1	63	63	0	0.0	3	74
	VERMONT																					
75	University of Vermont College of Medicine	50	36	14	28.0	10	38	27	11	28.9	5	12	9	3	25.0	9	18	17	1	5.6	3	75
	VIRGINIA																					
76	Medical College of Virginia	56	34	13	23.2	9	49	40	9	18.4	8	7	3	4	57.1	3	24	24	0	0.0	4	76
77	University of Virginia Departmentof Medicine	31	31	0	0.0	14	24	24	0	0.0	9	7	7	0	0.0	7	14	14	0	0.0	4	77
	WISCONSIN																					
78	Marquette University School of Medicine	17	17	0	0.0	4	16	16	0	0.0	3	1	1	0	0.0	1	15	15	0	0.0	2	78
	CANADA																					
79	Laval University Faculty of Medicine	5	1	4	80.0	2	5	1	4	80.0	2	0	0	0	0.0	0	1	0	1	100.0	1	79
80	McGill University Faculty of Medicine	22	18	4	18.2	9	16	13	3	18.7	7	6	5	1	16.7	4	5	3	2	40.0	3	80
81	Queen's University Faculty of Medicine	17	12	5	29.4	6	13	11	2	15.4	4	4	2	2	50.0	3	8	5	3	37.5	3	81
82	University of Manitoba Faculty of Medicine	1	1	1	0.0	1	0	0	0	0.0	0	1	1	0	0.0	1	0	0	0	0.0	0	82
83	University of Montreal Medical Faculty	8	3	5	62.5	6	4	0	4	100.0	3	4	3	1	25.0	4	0	0	0	0.0	0	83
84	University of Toronto Faculty of Medicine	30	27	3	10.0	11	11	9	2	18.2	6	19	18	1	5.3	8	0	0	0	0.0	0	84
85	Western University Faculty of Medicine	2	2	0	0.0	2	0	0	0	0.0	0	2	2	0	0.0	2	0	0	0	0.0	0	85
86	Foreign Colleges	86	53	33	38.4	24	22	16	6	27.3	10	64	37	27	42.2	21	0	0	0	0.0	8	86
87	Miscellaneous Medical Colleges	259	159	100	38.5	44	59	38	21	35.6	25	203	124	79	38.9	38	4	3	1	25.0	2	87
88	Undergraduates and Osteopaths	65	33	32	50.8	4	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	88
89	Totals by States	4787	4053	734	15.3	....	3984	3527	457	11.5	....	738	493	245	33.2	....	2559	2374	185	7.2	....	89

(CONTINUED FROM PAGE 1231)

during the year, graduated in 1920, including fourteen who graduated from Canadian medical colleges. Educational statistics show that the medical colleges of the United States graduated 3,047 students last year, therefore, 84 per cent. of all graduates in 1920 took examinations for license during that year. In some of the states, graduates in medicine are allowed to serve as hospital interns without first becoming licensed practitioners, which accounts for some of the remaining 16 per cent. Of the 1920 graduates examined 185, or 7.2 per cent., failed, as compared with 4.2 per cent. in 1919, 5.5 per cent. in 1918, 5.7 per cent. in 1917 and 7.4 per cent. in 1916.

Nonrecognition of Medical Colleges

Table D shows for each college, from official reports, the states in which its diplomas are not given unqualified recognition. Nonrecognition is expressed by different terms in different states. Some boards list colleges as "not in good standing"; some give them as "not reputable"; in New York full recognition is given only to colleges which are "registered," and in Michigan colleges are divided into groups, only those of Group 1 having full recognition. This table also shows the latest rating given to each college by the Council on Medical Education and Hospitals.

From the point of view of the prospective student who may be selecting a medical college, the facts in Table D are of extreme importance. There are 63 medical colleges now having complete recognition in all states. There are 7 others for which the few instances of nonrecognition are due to certain technicalities in state board requirements. If the student gets his medical training in one of the remaining 18 colleges, he will find on graduation that his diploma is not recognized in from 5 to 44 states!

Without the information published in Table D, these state board statistics would be not merely incomplete—they would be actually misleading. For example, 50 graduates of the Chicago Medical School were examined in 1920. Of these 32 passed and 18, or 36 per cent., failed. Note, however, that all these candidates were examined in 3 states while these graduates are reported as not admitted to the examinations for licensure in 41 states!

During the eight years this table has been published, the percentages of fully recognized colleges were, respectively, 29.0, 32.3, 43.7, 65.6, 57.3, 61.3, 67 8 and 71.6. This shows a decided improvement in the medical colleges. Of the 50 states—counting in Alaska and the District of Columbia—42 state licensing boards, to some extent at least, are now utilizing their legal power to refuse recognition to medical colleges which do not meet the requirements in the respective states. In the other eight states, however (including Alaska and the District of Columbia), this table indicates either that the practice acts do not give the boards authority to enforce a requirement of reasonable standards, or else that the boards are not exercising that authority. California and Wyoming each reports three colleges not recognized, Washington reports two, and Arizona and Nevada each reports one college not in good standing. It is evident that if the graduates of low standard medical colleges are not eligible for license in the majority of states, they will flock to these eight which still grant liberal recognition. The following states, therefore—Arizona, California, Massachusetts, Nevada, Utah, Washington, Wyoming—and the District of Columbia will remain the dumping grounds for the output of low grade medical college, until the licensing boards obtain the need authority, and until they take action in the matter. Arkansas, Florida and Connecticut are also registering through their separate sectarian licensing boards graduates of medical colleges not recognized in the majority of other states. It is reported that no examinations were held during the year by the Arkansas Homeopathic Board, and from the Florida Homeopathic and Eclectic Boards no reports were received. There is now only one remaining eclectic college in the United States and there are no homeopathic colleges in or near Arkansas or Florida. It is evident, therefore, that very few, if any candidates applied for examination before these boards.

TABLE 1.—RECOGNITION OF MEDICAL COLLEGES (BASED ON TABLE D)

	Number of Colleges
Recognized by all state boards	63
Not recognized by 1 or 2 state boards	7
Not recognized by 5 to 18 state boards	9
Not recognized by 40 to 44 state boards	9
Total	88

(CONTINUED ON PAGE 1242)

TABLE D.—RECOGNITION OF MEDICAL COLLEGES

This Table, Based on Official Reports, Shows the Numerous Pitfalls to Be Avoided by Prospective Medical Students

Colleges marked (x) have been reported as not recognized by the states in the columns of which the letter appears

Marginal Number	COLLEGE	Classification by Council on Medical Education†	1 Alabama	2 Alaska	3 Arizona	4 Arkansas	5 California	6 Colorado	7 Connecticut	8 Delaware	9 Dist. of Columbia	10 Florida	11 Georgia	12 Idaho	13 Illinois	14 Indiana	15 Iowa	16 Kansas	17 Kentucky	18 Louisiana	19 Maine	20 Maryland	21 Massachusetts	22 Michigan	23 Minnesota	24 Mississippi	25 Missouri	26 Montana	27 Nebraska	28 Nevada	29 New Hampshire	30 New Jersey	31 New Mexico	32 New York	33 North Carolina	34 North Dakota	35 Ohio	36 Oklahoma	37 Oregon	38 Pennsylvania	39 Rhode Island	40 South Carolina	41 South Dakota	42 Tennessee	43 Texas	44 Utah	45 Vermont	46 Virginia	47 Washington	48 West Virginia	49 Wisconsin	50 Wyoming	Reported Non-Recognition by State Licensing Boards: No. of State Boards reporting full recognition	No. of State Boards reporting college not recognized	Percentage of State Boards reporting full recognition	Marginal Number
1	Albany Medical College	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	1
2	Baylor University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	2
3	Boston University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	3
4	Bowdoin Medical School	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	4
5	Chicago Medical School[1]	C	x	x	..	x	..	x	x	x	..	x	x	x	..	x	x	x	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	..	x	x	..	x	..	x	..	..	x	x	..	9	41	18	5
6	College of Medical Evangelists	B	x	..	..	..	..	..	..	x	..	x	..	..	x	..	..	..	x	..	..	..	..	..	..	x	..	x	..	..	x	..	x	x	x	..	x	..	..	x	x	x	..	..	..	..	..	x	x	..	..	..	..	..	..	32	18	64	6
7	College of Physicians and Surgeons, Boston	C	x	x	..	x	..	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	x	x	x	..	x	..	x	..	x	x	..	8	42	16	7
8	College of Physicians and Surgeons, Los Angeles	B	x	..	..	..	..	..	..	x	..	x	..	..	..	..	..	..	x	..	..	..	..	..	x	..	x	..	x	..	..	x	..	..	x	..	x	..	..	..	x	x	..	..	..	..	..	x	..	..	..	..	..	..	36	14	72	8
9	College of Physicians and Surgeons, San Francisco[2]	C	x	x	..	x	..	x	x	x	..	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	x	x	x	..	x	..	x	..	x	x	..	9	41	18	9
10	Columbia University College of Physicians and Surg.	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	10
11	Cornell University Medical College	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	11
12	Dartmouth Medical School[3]	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	12
13	Detroit College of Medicine and Surgery	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	13
14	Eclectic Medical College	B	x	..	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	x	..	x	..	..	x	..	..	..	..	x	..	..	..	..	x	x	..	x	..	..	..	..	x	..	..	..	..	40	10	80	14
15	Emory University Medical College	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	15
16	Fordham University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	16
17	Georgetown University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	17
18	George Washington University Medical School	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	18
19	Hahnemann Medical College and Hospital, Chicago	B	x	..	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	x	..	x	..	..	x	..	..	..	..	x	..	..	..	..	x	x	..	..	..	..	..	..	x	..	..	..	..	41	9	82	19
20	Hahnemann Med. College and Hospital, Philadelphia	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	20
21	Harvard University Medical School	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	21
22	Howard University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	22
23	Indiana University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	23
24	Jefferson Medical College	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	24
25	John A. Creighton Medical College	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	25
26	Johns Hopkins University Medical Department	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	26
27	Kansas City College of Medicine and Surg. (Eclectic)	s	x	..	..	x	x	x	..	x	..	..	x	x	x	x	x	x	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	..	x	x	..	x	..	x	x	x	..	10	40	20	27
28	Kansas City University of Physicians and Surgeons[4]	C	x	x	x	x	..	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	x	x	x	..	x	x	..	x	x	x	x	5	45	10	28
29	Leland Stanford Junior Univ. School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	29
30	Long Island College Hospital	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	30
31	Loyola University Medical Department	A	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..	..	x	..	x	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	x	..	45	5	90	31
32	Marquette University School of Medicine	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	32
33	Medical College of the State of South Carolina	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	33
34	Medical College of Virginia	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	34
35	Meharry Medical College	B	x	..	..	..	..	..	..	x	..	x	..	..	..	..	..	..	..	..	..	..	..	..	x	..	x	..	x	..	..	x	x	..	x	..	..	..	..	..	x	x	x	..	..	..	..	x	..	..	..	..	..	..	36	14	72	35
36	Middlesex College of Medicine and Surgery	C	x	x	..	x	..	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	x	x	x	..	x	x	..	x	x	..	x	8	42	16	36
37	New York Homeo. Med. College and Flower Hospital	B	x	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	x	..	x	..	..	x	..	..	..	..	x	..	..	..	..	x	x	..	x	..	..	..	..	x	..	..	..	..	41	9	82	37
38	Northwestern University Medical School	A	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	....	100	38
39	Oakland College of Medicine and Surgery[5]	C	x	x	..	x	..	x	x	x	..	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	..	x	x	x	x	x	x	x	x	x	x	x	x	x	x	..	x	x	..	x	x	..	x	9	41	18	39

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(CONTINUED FROM PAGE 1239)

STUDY OF TOTALS AND PERCENTAGES

A study of totals and percentages (see Table 2) as compared with previous years is of interest. The number examined in 1920 was 1,150 more than in 1918; 57 more than in 1917 and 63 less than in 1916. Statistics regarding physicians licensed in the various states by reciprocity and by other methods are given in Tables G, H, I, J and K. By all methods—examination, reciprocity, under exemption, etc.—6,557 physicians were licensed during 1920, or 27 less than in 1919, but 2,372 more than in 1918, and 1,308 less than in 1906, when 7,865 physicians were licensed.

Other deductions from the larger tables, presented in Tables E and F, are worthy of special study.

STUDY OF LARGER COLLEGES

Table E is also based on the three large tables, and gives the results of state board examinations as they affect the thirty-two larger medical colleges. Although these colleges represent 41.0 per cent. of the seventy-eight medical colleges in the United States having graduates examined, in 1920 they furnished 72.8 per cent. of all candidates for license coming from medical schools of the United States. The table shows, also, that the graduating of large classes by a medical college does not prove excellence of teaching, since seven of these have high failure percentages. The larger the college from the standpoint of students and graduates, the more serious is inferior teaching ability, as indicated by a high failure percentage. In fairness both to medical students and to the public, such schools should strengthen their teaching facilities or reduce the size of their classes.

TOTALS EXAMINED IN FIVE YEARS

Table F shows the number registered and the number rejected in each state for each of the past five years. A comparison of this table with the statistics in the last educational number of THE JOURNAL (Aug. 7, 1920, p. 387, Table 11) shows—what would be expected—that the states having the several largest numbers of medical graduates examined the largest numbers of physicians. New York leads, having

TABLE 2.—RESULTS FOR THIS AND PREVIOUS YEARS

Year	All Candidates Examined: Examined	Passed	Failed	Percentage Failed	Recent Graduates: Examined	Percentage Failed	Older Graduates: Examined	Percentage Failed	Nondescript: Examined	Percentage Failed	Registered without Written Examination	Total Registered
1904	7035	5672	1353	19.3	4773	14.1	579	29.7	515	52.6	999	6671
1905	7170	5680	1490	20.8	6054	16.2	690	37.7	472	61.9	394	6074
1906	8035	6368	1667	20.7	6250	16.4	793	27.1	703	51.3	1497	7865
1907	7271	5723	1548	21.3	5922	15.1	675	27.7	674	69.6	1426	7149
1908	7770	6084	1686	21.7	6477	17.8	796	31.5	494	56.8	1276	7360
1909	7287	5857	1430	19.6	5891	15.4	958	30.0	438	54.1	1373	7230
1910	7004	5712	1292	18.4	5678	14.9	973	29.1	353	45.6	1640	7352
1911	6960	5578	1382	19.9	5685	17.2	945	29.4	330	38.5	1246	6824
1912	6879	5466	1413	20.5	5770	18.6	856	29.2	253	34.8	1257	6723
1913	6435	5236	1199	18.6	5390	16.5	225	32.1	251	37.8	1265	6501
1914	5570	4370	1200	21.6	4549	17.6	728	30.0	293	61.4	1427	5797
1915	5313	4486	827	15.6	4627	13.2	621	29.3	65	49.2	1386	5872
1916	4850	4123	727	15.0	4283	12.7	567	32.1	.....	.....	1338	5461
1917	4730	4061	669	14.1	4015	10.1	564	32.6	.....	.....	1362	5423
1918	3637	3154	483	13.3	2984	9.3	479	30.5	.....	.....	1031	4185
1919	4736	4060	676	14.3	3904	10.5	766	30.8	66	47.0	2521	6584
1920	4787	4053	734	15.3	3984	11.5	738	33.2	65	50.8	2504	6557

TABLE E.—COLLEGES HAVING FORTY OR MORE EXAMINED

COLLEGE	Graduates of All Years: No. Examined	No. Passed	No. Failed	Per Cent. Failed	No. of States	Graduates of 1916-1920: No. Examined	No. Passed	No. Failed	Per Cent. Failed	No. of States	Graduates of 1915 and Previous: No. Examined	No. Passed	No. Failed	Per Cent. Failed	No. of States	Graduates of 1920: No. Examined	No. Passed	No. Failed	Per Cent. Failed	No. of States	Marginal No., Table A
Jefferson Medical College	210	198	12	5.7	31	186	178	8	4.3	24	24	20	4	16.7	15	52	52	0	0.0	13	63
Rush Medical College (University of Chicago)	181	179	2	1.1	18	164	162	2	1.2	16	17	17	0	0.0	9	135	134	1	0.7	11	20
University of Pennsylvania School of Medicine	160	149	11	6.9	30	148	140	8	5.4	27	12	9	3	25.0	7	24	24	0	0.0	13	65
Columbia University College of Phys. and Surgs.	153	135	18	11.8	23	136	118	18	13.2	20	17	17	0	0.0	8	69	64	5	7.2	6	47
Medical School of Harvard University	148	143	5	3.4	29	115	113	2	1.7	23	33	30	3	9.1	16	73	73	0	0.0	15	32
Johns Hospkins University Medical Department	135	125	10	7.4	31	123	114	9	7.3	27	12	11	1	8.3	10	66	62	4	6.1	12	28
Tufts College Medical School	131	109	22	16.8	13	121	102	19	15.7	9	10	7	3	30.0	6	90	79	11	12.2	5	34
University and Bellevue Hospital Med. College	130	123	7	5.4	8	124	117	7	5.6	5	6	6	0	0.0	4	104	101	3	2.9	3	53
Meharry Medical College	129	70	59	45.8	20	90	61	29	32.2	16	39	9	30	77.0	11	61	49	12	19.7	12	69
Univ. of Md. Sch. of Med. and Coll. of P. & S.	109	95	14	12.8	21	96	85	11	11.5	15	13	10	3	23.1	11	59	53	6	10.2	9	29
Tulane Univ. of Louisiana School of Medicine	106	105	1	0.9	15	100	100	0	0.0	13	6	5	1	16.7	6	88	88	0	0.0	7	26
Loyola University School of Medicine	105	95	10	9.5	17	105	95	10	9.5	17	.....	.....	.....	.....	.....	68	67	1	1.5	3	18
Northwestern University Medical School	103	97	6	5.8	19	95	92	3	3.2	17	8	5	3	37.5	4	17	17	0	0.0	10	19
University of Michigan Medical School	96	94	2	2.1	10	92	91	1	1.1	8	4	3	1	25.0	3	80	80	0	0.0	5	36
Long Island College Hospital	95	83	12	12.6	6	91	80	11	12.1	3	4	3	1	25.0	4	76	67	9	11.8	1	50
University of Illinois College of Medicine	94	83	11	11.7	20	75	71	4	5.3	14	19	12	7	36.8	10	61	59	2	3.3	9	21
Fordham University School of Medicine	87	67	20	23.0	4	79	62	17	21.5	3	8	5	3	37.5	2	52	44	8	15.4	2	49
University of Minnesota Medical School	87	86	1	1.1	9	83	82	1	1.2	8	4	4	0	0.0	3	66	66	0	0.0	5	38
New York Homeo. Med. Coll. and Flower Hosp.	85	50	35	41.2	7	75	46	29	38.7	5	10	4	6	60.0	3	38	29	9	23.7	3	51
St. Louis University School of Medicine	72	71	1	1.4	14	68	67	1	1.5	11	4	4	0	0.0	3	61	60	1	1.6	7	42
University of Texas Department of Medicine	70	69	1	1.4	8	69	68	1	1.4	7	1	1	0	0.0	1	63	63	0	0.0	3	74
Cornell University Medical College	66	58	8	12.1	6	64	56	8	12.5	5	2	2	0	0.0	2	44	40	4	9.1	1	48
State University of Iowa College of Medicine	64	63	1	1.6	8	58	58	0	0.0	5	6	5	1	16.7	4	55	55	0	0.0	3	23
University of Buffalo Medical Department	63	58	5	7.9	6	59	55	4	6.8	3	4	3	1	25.0	4	56	52	4	7.1	1	54
Vanderbilt University School of Medicine	62	53	9	14.5	16	45	44	1	2.2	11	17	9	8	47.1	8	35	35	0	0.0	7	72
University of Louisville Medical Department	59	42	17	28.8	20	36	33	3	8.3	10	23	9	14	60.9	12	29	28	1	3.4	7	25
Medical College of Virginia	56	43	13	23.2	9	49	40	9	18.4	8	7	3	4	57.1	3	24	24	0	0.0	4	76
Western Reserve Univrsity School of Mdicine	52	52	0	0.0	5	52	52	0	0.0	5	.....	.....	.....	.....	.....	47	47	0	0.0	2	59
Eclectic Medical College	52	41	11	21.1	9	49	41	8	16.3	8	3	0	3	100.0	2	45	38	7	15.6	7	55
Washington University Medical School	51	50	1	2.0	16	46	45	1	2.2	12	5	5	0	0.0	5	31	31	0	0.0	5	43
Chicago Medical School	50	32	18	36.0	3	47	31	16	34.0	3	3	1	2	66.7	1	21	17	4	19.0	1	16
University of Vermont College of Medicine	50	36	14	28.0	10	38	27	11	28.9	5	12	9	3	25.0	9	18	17	1	5.6	3	75
Totals	3111	2754	357	11.5	....	2778	2526	252	9.1	....	333	228	105	31.4	....	1808	1715	93	5.1		

This table is interesting, since it gives data relating to the 32 larger medical colleges arranged according to the number of graduates examined. This allows of comparison between colleges having classes of nearly equal size. Jefferson Medical College had the largest number of graduates examined in 1919 and 1920. The position was held by the Chicago College of Medicine and Surgery in 1913 to 1918, inclusive, by the University of Illinois College of Medicine in 1906, 1907 and 1912; in 1908 by Jefferson Medical College, and in 1909, 1910 and 1911 by the University of Louisville Medical Department. The higher places from the standpoint of the numbers examined, however, do not always mean the higher places from the standpoint of scholarship. Note the percentages of failures. The five highest failure percentages are for Meharry Medical College, 45.8; New York Homeopathic Medical College, 41.2; Chicago Medical School (formerly Chicago Hospital College of Medicine), 36.0; University of Louisville Medical Department, 28.8, and the University of Vermont College of Medicine, 28.0.

Of the 13 colleges having 100 or more examined, nine have failure percentages of less than 10, while four stand out prominently with large failure percentages. Of the 19 colleges having between 50 and 100 graduates examined, eight had failure percentages of less than 10, four had between 10 and 20, and seven had over 20 per cent.

The average percentage of failures for these larger colleges for graduates of 1915 and previous years was 31.4; for graduates of 1916 to 1920, inclusive (recent graduates), 9.1; for graduates of 1920, 5.1 and for graduates of all years, 11.5. Of the 4,292 graduates of the 78 colleges in the United States which had graduates examined by state boards in 1920, these larger (41.0 per cent. of all) schools furnished 3,111, or 72.5 per cent., of the graduates examined.

examined 3,756 candidates in five years, followed by Illinois with 2661. Altogether, 22,740 physicians were examined by state boards in five years, an average of 4,548 each year.

TOTAL REGISTRATION IN 1920

The tables thus far described have referred only to the results of examinations and to those registered on that basis. Table G, however, shows the total number who received licenses in each states, including those registered by examination, by reciprocity and under various exemption clauses.

TABLE F.—PHYSICIANS EXAMINED BY STATE BOARDS, 1916 TO 1920, INCLUSIVE

	1916		1917		1918		1919		1920		Totals			
	Registered	Rejected	Registered	Rejected	Registered	Rejected	Registered	Rejected	Registered	Rejected	Examined	Registered	Rejected	Percentage Rejected
Alabama	55	36	45	21	20	9	23	12	34	2	257	177	8	31.1
Arizona	33	9	32	5	33	8	48	5	33	14	220	179	41	18.6
Arkansas	67	11	80	12	68	4	70	7	48	28	395	333	62	15.7
California	148	8	235	94	203	71	109	56	150	34	1106	843	263	23.8
Colorado	25	8	38	2	44	10	57	16	56	46	302	220	82	27.2
Connecticut	41	20	72	22	39	14	94	24	97	26	419	343	106	23.6
Delaware	13	2	14	0	10	1	19	1	6	3	69	62	7	10.1
Dist. of Columbia	33	14	26	7	37	4	51	6	61	5	244	208	36	14.8
Florida	68	18	44	12	21	8	64	17	72	18	342	269	73	21.3
Georgia	133	7	100	2	48	2	60	5	70	6	433	411	22	5.1
Idaho	29	0	20	2	16	0	31	0	27	2	127	123	4	3.1
Illinois	517	91	487	101	367	57	475	96	404	66	2661	2250	411	15.4
Indiana	49	4	39	2	43	6	34	0	64	0	241	229	12	5.0
Iowa	82	2	45	1	50	1	78	4	76	2	341	331	10	2.9
Kansas	32	1	24	3	20	0	32	3	32	2	149	140	9	6.0
Kentucky	66	10	68	16	40	2	31	7	30	4	274	235	39	14.2
Louisiana	68	10	44	13	50	6	80	6	81	2	360	323	37	10 3
Maine	25	2	33	1	27	3	43	3	24	1	162	152	10	6.2
Maryland	96	30	82	11	54	5	145	11	107	11	552	484	68	12.3
Massachusetts	166	40	219	42	228	18	305	41	217	69	1345	1135	210	15.6
Michigan	135	5	125	3	97	4	52	0	161	2	584	570	14	2.4
Minnesota	56	1	60	0	68	0	98	0	90	4	377	372	5	1.1
Mississippi	48	29	23	5	12	0	18	3	30	1	169	131	38	22.5
Missouri	161	13	166	12	143	21	136	1	117	5	775	723	52	6.7
Montana	38	14	43	24	20	7	26	12	25	3	212	152	60	28.3
Nebraska	58	0	63	0	44	1	102	5	27	0	294	288	6	2.0
Nevada	10	1	8	0	5	1	13	0	14	2	54	50	4	7.4
New Hampshire	10	0	6	0	4	2	5	0	6	1	34	31	3	8.8
New Jersey	72	10	26	6	16	1	61	1	38	1	232	213	19	8.2
New Mexico	5	1	...	...	2	0	2	0	3	0	13	12	1	7.7
New York	523	159	600	146	456	117	627	189	703	246	3756	2909	857	22.9
North Carolina	96	18	65	10	49	3	59	9	70	3	382	339	43	11.3
North Dakota	15	5	6	1	6	3	6	4	13	3	62	46	16	25.8
Ohio	182	5	185	4	142	6	156	8	179	5	872	844	28	3.2
Oklahoma	52	8	52	2	24	0	34	0	14	0	186	176	10	5.4
Oregon	38	17	37	7	35	7	39	3	61	19	263	210	53	20.2
Pennsylvania	233	33	241	12	168	22	213	28	288	41	1279	1143	136	10.6
Rhode Island	27	7	22	1	13	4	20	5	25	5	129	107	22	17.1
South Carolina	53	24	37	29	17	12	45	14	33	8	272	185	87	32.0
South Dakota	18	2	18	1	14	0	20	1	38	2	114	108	6	5.3
Tennessee	128	20	167	10	103	19	96	7	82	0	632	576	56	8.9
Texas	90	13	119	5	82	2	89	3	103	0	506	483	23	4.5
Utah	15	0	11	0	10	1	29	0	18	1	85	83	2	2.4
Vermont	17	0	13	1	24	0	22	0	18	0	95	94	1	1.1
Virginia	99	8	64	4	50	6	65	12	55	4	367	333	34	9.3
Washington	48	4	57	7	59	7	63	10	24	5	284	251	33	11.6
West Virginia	58	2	45	7	16	4	35	15	41	10	233	195	38	16.3
Wisconsin	72	4	40	3	34	2	34	0	46	1	236	226	10	4.2
Wyoming	17	0	13	0	22	2	19	8	9	0	90	80	10	11.1
U. S. Territories and Possessions	11	1	2	0	1	0	27	18	33	21	114	74	40	35.1
Totals	4,850		4,730		3,637		4,736		4,740		22,740			
Registered	4,123		4,061		3,154		4,060		4,053		19,451			
Rejected	727		669		483		676		734		3,289			
Per Cent. Rejected	15.0		14.1		13.2		14.3		15.4		14.6			

This table gives the number of candidates registered and rejected on examination by each state during each of the last five years. The last four columns give the totals for the five years and the percentage rejected by each state. Compare this table with Table H.

Four states registered over 1,000 candidates by examination in the five years, these being New York, Illinois, Massachusetts and Pennsylvania. Over 2,000 were registered in only two states, New York with 2,909 and Illinois with 2,250. Altogether 22,740 physicians were registered by examination in five years, an average of 4,548 each year.

The five highest percentages of rejections for the five years were in South Carolina, 32.0; Alabama, 31.1; Montana, 28.3; Colorado, 27.2; North Dakota, 25.8, and California, 23.8. California and Colorado admit graduates of low type and nondescript colleges to their examinations; the latter admitting also undergraduates; and for that reason would be expected to have higher percentages rejected. On the other hand, in several states the boards refused to recognize certain colleges and eliminated many candidates prior to the examination by a careful scrutiny of credentials (see Table D), and as a result the percentages of failures at the examinations are lower than otherwise would be the case. For example, Michigan rejected only 2.4 per cent. of those who took their examinations, but graduates of twelve medical colleges are not eligible for admission to the examinations.

The lowest failure percentages were in Vermont and Minnesota, each 1.1; Nebraska, 2.0; Utah and Michigan, each 2.4; Iowa, 2.9; Idaho, 3.1, and Ohio, 3.2.

Altogether 6,557 physicians were registered by all methods during 1920 as compared with 6,584 in 1919, 4,185 in 1918, 5,423 in 1917, 5,461 in 1916. The total registered in 1918—4 185—was the lowest number registered in any year since the publication of these statistics was begun, owing, undoubtedly to the war. In 1919 the total increased by 2,399 and was the largest number since 1912. In 1920 there was a decrease of 27, of which 17, or 63 per cent., were in reciprocal registrations.

TABLE G.—REGISTRATION BY STATE BOARDS DURING THE YEAR 1920

STATES	By Examination			By Reciprocity	Without Written Examination or Under Exemption	Total Registered
	Graduates, 1916-1920	Graduates, 1915 and Previous	Nongraduates and graduates of Nondescript Colleges			
Alabama	27	7	....	20	....	54
Arizona	13	20	....	....	....	33
Arkansas	42	5	....	49	....	97
California	122	16	12	501	....	651
Colorado	32	7	17	82	....	138
Connecticut	77	20	....	8	3	108
Delaware	6	0	....	1	....	7
District of Columbia	57	4	....	16	....	77
Florida	21	51	....	....	....	72
Georgia	64	6	....	44	....	114
Idaho	13	14	....	14	....	41
Illinois	378	26	....	78	....	482
Indiana	62	2	....	94	....	158
Iowa	68	8	....	56	....	132
Kansas	31	1	....	64	....	96
Kentucky	30	0	....	21	....	51
Louisiana	74	7	....	12	....	93
Maine	20	4	....	6	....	30
Maryland	99	8	....	57	....	164
Massachusetts	192	25	....	....	....	217
Michigan	153	8	....	126	....	287
Minnesota	85	5	....	84	....	174
Mississippi	26	4	....	17	....	47
Missouri	106	11	....	60	....	177
Montana	17	8	....	1	....	26
Nebraska	26	1	....	48	....	75
Nevada	4	10	....	17	....	31
New Hampshire	6	0	....	15	....	21
New Jersey	30	8	....	133	....	171
New Mexico	2	1	....	4	39	46
New York	651	52	....	72	4	779
North Carolina	67	3	....	44	....	114
North Dakota	12	1	....	15	....	28
Ohio	173	6	....	132	....	311
Oklahoma	8	4	2	57	....	71
Oregon	36	25	....	4	....	65
Pennsylvania	268	20	....	28	....	316
Rhode Island	17	8	....	....	....	25
South Carolina	26	7	....	8	....	41
South Dakota	18	20	....	11	....	49
Tennessee	66	16	....	1	....	83
Texas	102	1	....	168	....	271
Utah	14	2	2	14	....	32
Vermont	16	2	....	2	....	20
Virginia	51	4	....	30	....	85
Washington	16	8	....	103	....	127
West Virginia	37	4	....	54	....	95
Wisconsin	38	8	....	60	....	106
Wyoming	5	4	....	25	....	34
U. S. Territories and Possessions	22	11	....	2	....	35
Totals	3,527	493	33	2,458	46	6,557

This table shows the total number registered during 1920 in each state by the various methods. The first three columns show those registered by examination; the first column showing the recent graduates registered, the second column the old practitioners (graduates of 1915 and previous years) and the third column shows a few nongraduates, graduates of nondescript colleges and some osteopaths who were given licenses as physicians and surgeons. The fourth column shows the number licensed through reciprocity, by endorsement of other state licenses and by certificates of the National Board of Medical Examiners. The fifth column shows those licensed under various exemption clauses in the practice acts, such as because of national fame or by recognition of diplomas (New Mexico). California licensed as physicians 12 out of 27 graduates of osteopathic colleges, and Colorado so licensed 17 out of 32 osteopaths.

It is interesting to note that states like Florida, Massachusetts and New York, which have no reciprocal relations or which reciprocate with only a few other states, have registered by examination the largest number of old practitioners. The large registration through reciprocity in California is due to the liberal provision in the recent medical practice act providing for the recognition of licenses granted in other states. No reciprocal registrations were reported for four states, Connecticut, Florida, Massachusetts, Rhode Island and the United States territories and possessions.

The last column shows the total number of physicians registered by all methods in each state during the year. Four states registered over 300 each, these being New York, 779, California, 651; Illinois, 482, and Pennsylvania, 316. Fifteen states registered less than 50 each. The largest registration was in New York, and the smallest number was 7 in Delaware. The total registered by all methods was 6.557, a decrease of 46 below the total registered in 1919.

By reciprocity or under exemption clauses 2,504 were licensed in 1920 as compared with 2,524 in 1919, 1,031 in 1918, 1,362 in 1917 and 1,338 in 1916.

Over 100 were registered by all methods in twenty states; over 200 in eight, and over 300 in four, the largest numbers registered being 779 in New York, 651 in California, 482 in Illinois and 316 in Pennsylvania. Of those licensed in California 501, or 77 per cent., were registered by the endorsement of licenses granted by the boards of other states. California also registered as physicians and surgeons 12 graduates of osteopathic colleges. Seventeen osteopaths were so licensed in Colorado, 2 in Oklahoma and two in Utah. Texas registered by reciprocity with full privileges to practice as physicians 26 osteopaths and two undergraduates.

TABLE H.—REGISTRATIONS BY STATE BOARDS FOR FIVE YEARS

STATE	1916	1917	1918	1919	1920	Totals
Alabama	55	48	26	55	54	238
Arizona	33	32	33	48	33	179
Arkansas	95	111	81	130	97	514
California	302	440	342	445	651	2,180
Colorado	86	100	97	141	138	562
Connecticut	58	84	46	107	108	403
Delaware	19	17	24	28	7	95
Dist. of Columbia	44	33	41	66	77	261
Florida	68	44	21	64	72	269
Georgia	152	122	72	111	114	571
Idaho	33	25	31	49	41	179
Illinois	556	520	392	568	482	2,518
Indiana	77	79	58	65	158	437
Iowa	103	91	79	149	132	554
Kansas	95	67	56	89	96	403
Kentucky	75	76	54	68	51	324
Louisiana	77	51	57	98	93	376
Maine	31	42	32	51	30	186
Maryland	120	100	73	179	164	636
Massachusetts	166	219	228	305	217	1,135
Michigan	224	198	145	182	287	1,036
Minnesota	101	103	97	179	174	654
Mississippi	58	37	15	46	47	203
Missouri	212	206	186	232	177	1,013
Montana	39	43	20	26	26	154
Nebraska	70	99	77	167	75	488
Nevada	29	24	16	22	31	122
New Hampshire	25	18	7	18	21	89
New Jersey	163	122	101	263	171	820
New Mexico	63	67	33	50	46	259
New York	545	635	496	711	779	3,166
North Carolina	113	86	67	82	114	462
North Dakota	35	24	11	18	28	116
Ohio	251	245	175	285	311	1,267
Oklahoma	107	142	73	116	71	509
Oregon	38	37	35	39	65	214
Pennsylvania	252	258	172	269	316	1,267
Rhode Island	27	22	13	20	25	107
South Carolina	53	37	17	45	41	193
South Dakota	18	24	14	20	49	125
Tennessee	142	167	114	123	83	629
Texas	166	176	149	275	271	1,037
Utah	23	20	23	54	32	152
Vermont	23	13	25	24	20	105
Virginia	131	82	78	127	85	503
Washington	48	57	59	105	127	396
West Virginia	90	84	41	76	95	386
Wisconsin	127	67	54	148	106	502
Wyoming	32	27	28	19	34	140
U. S. Possessions	11	2	1	27	35	76
Totals	5,461	5,423	4,185	6,584	6,557	28,210

This table shows the totals registered in each state during each of the last five years. In some states it will be noted that there has been a gradual decrease during the first four years and a large increase in 1920. In others this increase has not been so large. The totals also are given for the entire five years. It will be noted that nine states registered over 1,000 physicians, the largest number being in New York with 3,147 followed by Illinois with 2,518, California with 2,180, Ohio and Pennsylvania each with 1,267, Massachusetts with 1,135 and Texas with 1,037. Omitting the outlying territories the lowest registration during the five years was in New Hampshire, where only 89 physicians were registered, followed by Delaware with 95, Vermont with 105, Rhode Island with 107, North Dakota with 116 and Nevada with 122.

In the five years there were altogether 28,210 registrations, an average of 5,642 each year.

TOTAL REGISTRATION IN FIVE YEARS

Table H permits the reader to compare the registrations in each state for the last five years. There was a decrease from 1916 to 1918. The decrease of 1,238 in 1918 was due undoubtedly to war conditions. A rebound was seen however, in 1919, when there was an increase of 2,399. This highest mark since 1912 in total registrations is nearly maintained in 1920 since the decrease is only 27. It is interesting to compare the registrations in different states. For example, in 1918 Massachusetts had an increase in the number of registrations regardless of the general decrease in the majority of states. Massachusetts was one of the states which also in 1919 showed an increase beyond what would be expected by the general increase. Since Massachusetts does not have reciprocal relations with other states, this increase is apparently due to the medical practice act in that state which does not give the board authority to refuse recognition to low grade medical colleges and the board cannot insist on reasonable standards of preliminary or professorial education. The 1920 registrations, however, are 217, approximately the same as in 1917. Attention is called also to the figures in 1919 for Arkansas, California, Connecticut, Minnesota, Nebraska, Texas, Wisconsin and Washington, in which states the registrations are larger than would be expected even with the general increase in registrations in 1919. In California and Texas this seems to be due to the generous provision for reciprocity. In 1920 California swings into second place with a total registration of 651, including 501 (76.9 per cent.) who were registered through reciprocity. In Arkansas and Connecticut, although the regular medical boards exact fairly high qualifications, there are generous sectarian boards which are not so particular. In Nebraska, only a high school education is required as the minimum standard of preliminary education.

In 1920 the marked increases in registrations were in California, Indiana, Michigan, North Carolina, Pennsylvania and Washington. Marked decreases in registration are noted in Delaware, Maine, Oklahoma, Tennessee and Virginia.

The three largest registrations for the five years are in New York, Illinois and California; the three lowest in New Hampshire, Delaware, and Vermont. Altogether there were 28,210 registrations in the five years.

MEDICAL TRAINING OF APPLICANTS LICENSED IN 1920

Table I is of special interest, since it shows for each state the numbers of candidates coming from medical schools rated in classes A, B and C, thereby indicating the character of the medical training of the candidates licensed during 1920. Of the 6,557 candidates registered, 4,053 were licensed by examination and 2,504 by reciprocity or on presentation of acceptable credentials. Those who graduated prior to 1907, when the first classification of medical colleges was completed by the Council on Medical Education, are included among those graduating from "Miscellaneous Colleges." Among the graduates of Class C schools are included 33 graduates of osteopathic colleges who were licensed as physicians in California, Colorado, Oklahoma, Utah and Texas. The Texas totals of Class C candidates would be increased if the 26 osteopaths who were licensed by reciprocity and who evidently received licenses as physicians were included. Altogether, of the 6,557 candidates registered in 1920, 4,597, or 70.2 per cent., were graduates of Class A medical schools; 631, or 9.6 per cent., were from Class B schools; 275, or 4.2 per cent., were from Class C schools, and for 1,054, or 16.0 per cent., the colleges are unclassified.

As will be noted, the largest numbers of Class C graduates were licensed in California with 61; Colorado and Illinois, each with 33; Texas with 28; Arkansas, 26, and Massachusetts, 19. All of the Class C graduates registered in Arkansas were licensed by the Eclectic Board.

California registered 69 Class B graduates, the largest number, followed by New York, with 55; Illinois with 54; Ohio with 44 and Missouri with 32. Only Class A graduates were registered either by examination or by reciprocity in, Maine, New Hampshire and Vermont.

It is evident that in several states, particularly, more care should be taken in the recognition of medical colleges, or better methods of examination should be adopted which will provide better safeguards against those not having adequate education.

SOURCE OF CANDIDATES REGISTERED IN FOUR YEARS

Of the 6,557 physicians registered by all methods in 1920, 4,597, or 70.2 per cent., graduated from Class A medical colleges; 631, or 9.6 per cent., were from Class B medical colleges; and 275, or 4.2 per cent., were from Class C medical colleges. Of all candidates examined, 1,054, or 16.0 per cent., graduated prior to the first classification of medical colleges

or came from foreign medical colleges. By comparing these figures with the results for the previous three years as shown in Table 3, it is noteworthy that the percentages from Class B and Class C colleges are steadily decreasing and that the percentage of graduates of Class A colleges are increasing notwithstanding the fact that, in a few states, osteopaths are being licensed as physicians and surgeons.

TABLE 3.—SOURCE OF PHYSICIANS LICENSED IN THREE YEARS

Year	Medical Colleges in Class A		Class B		Class C		Miscellaneous and Foreign Colleges		Total
	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	
1917	3,369	62.1	988	18.2	297	5.3	769	14.4	5,423
1918	2,456	58.7	682	16.3	342	8.2	705	16.8	4,185
1919	4,368	66.4	872	13.2	278	4.2	1,066	16.2	6,584
1920	4,597	70.2	631	9.6	275	4.2	1,054	16.0	6,557
Totals	14,790	65.0	3,173	14.0	1,192	5.2	3,594	15.8	22,749

Registration by Reciprocity

Table J gives those registered without examination on presentation of satisfactory credentials, which included a license issued by some other state. This is commonly referred to as "reciprocity," which conveys the idea that the state which accepts a license of another must be granted the same courtesy by the state issuing the original license. The term does not always apply, however, since some state boards—Arizona, California, Colorado, Delaware, Maryland, New Hampshire, New Jersey and North Carolina, as examples—accept the physician's credentials, if satisfactory, whether or not the state board issuing the original license returns the favor. Had not reciprocal relations been established by the forty states shown in Table J, 2,458 physicians—many of

TABLE I.—CHARACTER OF PHYSICIANS LICENSED IN 1920

Marginal Number	STATES	By Examination: Medical Colleges in Class A	B	C	Misc.	Totals	By Reciprocity or Credentials: Medical Colleges in Class A	B	C	Misc.	Totals	Totals Registered from Medical Colleges in Class A	B	C	Misc.	Grand Totals	Marginal Number
1	Alabama	27	6	1	0	34	12	4	2	2	20	39	10	3	2	54	1
2	Arizona	21	3	0	9	33	0	0	0	0	0	21	3	0	9	33	2
3	Arkansas	15	3	26[1]	4	48	21	13	0	15	49	36	16	26[1]	19	97	3
4	California	79	27	28[2]	16	150	186	42	33	240	501	265	69	61[2]	256	651	4
5	Colorado	20	1	32[3]	3	56	37	6	1	38	82	57	7	33[3]	41	138	5
6	Connecticut	90	3	0	4	97	3	1	1	6	11	93	4	1	10	108	6
7	Delaware	3	3	0	0	6	0	0	1	0	1	3	3	1	0	7	7
8	District of Columbia	54	4	1	2	61	12	0	0	4	16	66	4	1	6	77	8
9	Florida	33	5	3	31	72	0	0	0	0	0	33	5	3	31	72	9
10	Georgia	52	15	0	3	70	24	10	1	9	44	76	25	1	12	114	10
11	Idaho	19	2	0	6	27	12	0	0	2	14	31	2	0	8	41	11
12	Illinois	324	34	33	13	404	46	20	0	12	78	370	54	33	25	482	12
13	Indiana	59	5	0	0	64	44	22	2	26	94	103	27	2	26	158	13
14	Iowa	71	2	0	3	76	32	13	2	9	56	103	15	2	12	132	14
15	Kansas	31	0	0	1	32	31	10	2	21	64	62	10	2	22	96	15
16	Kentucky	24	6	0	0	30	11	2	3	5	21	35	8	3	5	51	16
17	Louisiana	73	4	0	4	81	9	2	0	1	12	82	6	0	5	93	17
18	Maine	21	0	0	3	24	2	0	0	4	6	23	0	0	7	30	18
19	Maryland	103	1	0	3	107	27	2	3	25	57	130	3	3	28	164	19
20	Massachusetts	184	9	19	5	217	0	0	0	0	0	184	9	19	5	217	20
21	Michigan	145	11	1	4	161	70	13	0	43	126	215	24	1	47	287	21
22	Minnesota	89	0	0	1	90	57	14	1	12	84	146	14	1	13	174	22
23	Mississippi	24	4	1	1	30	10	0	0	7	17	34	4	1	8	47	23
24	Missouri	94	14	4	5	117	33	18	1	8	60	127	32	5	13	177	24
25	Montana	17	2	1	5	25	1	0	0	0	1	18	2	1	5	26	25
26	Nebraska	25	1	0	1	27	19	16	2	11	48	44	17	2	12	75	26
27	Nevada	6	1	3	4	14	4	1	3	9	17	10	2	6	13	31	27
28	New Hampshire	6	0	0	0	6	11	0	0	4	15	17	0	0	4	21	28
29	New Jersey	33	2	1	2	38	78	9	6	40	133	111	11	7	42	171	29
30	New Mexico	0	3	0	0	3	14	4	0	25	43	14	7	0	25	46	30
31	New York	641	46	0	16	703	34	9	0	33	76	675	55	0	49	779	31
32	North Carolina	64	6	0	0	70	27	6	2	9	44	91	12	2	9	114	32
33	North Dakota	10	2	0	1	13	13	1	0	1	15	23	3	0	2	28	33
34	Ohio	144	33	0	2	179	84	11	0	37	132	228	44	0	39	311	34
35	Oklahoma	10	1	2	1	14	25	12	3	17	57	35	13	5	18	71	35
36	Oregon	40	5	2	14	61	1	1	1	1	4	41	6	3	15	65	36
37	Pennsylvania	266	16	1	5	288	23	0	0	5	28	289	16	1	10	316	37
38	Rhode Island	20	1	1	3	25	0	0	0	0	0	20	1	1	3	25	38
39	South Carolina	29	0	1	3	33	7	1	0	0	8	36	1	1	3	41	39
40	South Dakota	25	2	2	9	38	8	1	0	2	11	33	3	2	11	49	40
41	Tennessee	53	24	2	3	82	1	0	0	0	1	54	24	2	3	83	41
42	Texas	100	0	3[4]	0	103	59	16	25	68	168	159	16	28[4]	68	271	42
43	Utah	15	0	2	1	18	9	0	0	5	14	24	0	2	6	32	43
44	Vermont	18	0	0	0	18	2	0	0	0	2	20	0	0	0	20	44
45	Virginia	50	3	1	1	55	20	4	0	6	30	70	7	1	7	85	45
46	Washington	16	1	1	6	24	44	7	2	50	103	60	8	3	56	127	46
47	West Virginia	34	5	1	1	41	37	5	2	10	54	71	10	3	11	95	47
48	Wisconsin	58	3	0	5	46	40	10	1	9	60	78	13	1	14	106	48
49	Wyoming	4	2	0	3	9	13	4	1	7	25	17	6	1	10	34	49
50	U. S. Territories and Possessions	25	0	1	7	33	0	0	0	2	2	25	0	1	9	35	50
	Totals	3,344	321	174	214	4,053	1,253	310	101	840	2,504	4,597	631	275	1,054	6,557	

1. Of the 97 physicians licensed in Arkansas, the Regular Board licensed by examination 15 Class A, 3 Class B and 2 miscellaneous graduates and by reciprocity 21 Class A, 13 Class B and 15 miscellaneous graduates, a total of 69. The Eclectic Board licensed by examination all of the 26 Class C graduates and 2 of the miscellaneous graduates. The Homeopathic Board reported no candidates licensed either by examination or by reciprocity.

2. Of the 61 graduates of Class C colleges licensed in California, 12 were graduates of osteopathic colleges which are not generally recognized as medical colleges by state licensing boards. Altogether, 27 osteopaths were admitted to the examination for licensure as physicians and 12 were licensed.

3. Of the 33 graduates of Class C colleges licensed in Colorado, 17 were graduates of osteopathic colleges, institutions inferior in most respects to Class C medical schools which are reported as not recognized in Colorado. Thirty-two osteopaths were admitted to the examination for physicians and 17 were so licensed.

4. Texas licensed 3 Class C graduates by examination (although Class C colleges are reported as not recognized) and 25 Class C graduates (excluding 26 osteopaths) were licensed by reciprocity, a total of 28.

This table shows the classification of the colleges from which most of the physicians graduated who were licensed in 1920. Graduates of colleges which became extinct prior to 1907 who were examined, and all reciprocity licentiates who graduated prior to 1907, are unclassified and included under "miscellaneous" since it was in 1907 that the Council on Medical Education and Hospitals completed its first classification of all medical colleges.

It will be seen that twelve states accepted altogether 31 Class C graduates through reciprocity where they did not license any by examination. On the whole, however, 174 Class C graduates were licensed by examination and 101 were registered through reciprocity.

By both examination and reciprocity, the largest numbers of Class C graduates were licensed in California, 61; Colorado and Illinois, each 33; Texas, 28; Arkansas, 26, and Massachusetts, 19. The Texas figures would be increased by 26 if the osteopaths who were registered by reciprocity and granted licenses as physicians were included. The largest numbers of Class B graduates were licensed in California, 69; New York, 55; Illinois, 54; Ohio, 44, and Missouri, 22.

Of all physicians licensed 4,597, or 70.2 per cent., were graduates of Class A medical schools; 631, or 9.6 per cent., from Class B schools; 275, or 4.2 per cent., from Class C schools, and 1,054, or 16 per cent., from foreign and miscellaneous colleges.

TABLE J.—PHYSICIANS REGISTERED THROUGH RECIPROCITY BY STATE EXAMINING BOARDS DURING 1920

STATE BOARDS OF	Total Reg. by Recip.	Reg. by Ex. State	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U.S.A.,U.S.N. etc	Nat. Bd. Med. Ex.	U. S. Territories	Foreign
Alabama	20											1		2		1		2	4		2																	1				3	1		1			1		1			
Arkansas	49											1		3			1	3	3		1				4														1				19	3										
California	501	3	5	3		3	6		3	1	6	2	102	10	27	12	2	6	2	7	19	18	19			28	8	12	4		3		33		7	23	4	13	22	1		11	4	6	10	3	2	19	1	9	1	15		4	
Colorado	82	1			1		1		2				8	1	2	6	1				4					12		9			1		3	1	1	1	2	1	4		1	3	3	1			1		3	1		1
Connecticut	8																				3												3					1	1														
Delaware	1																																																			
Dist. of Col.	16																		1		4				1					1									2				1				6						
Georgia	44	10		1											1					2	4			1	2													1				14	1			2		1				
Idaho	14				1	2																					2		1								2						6							
Illinois	78	4		3	2									5	12	1	3	1	2	6	2	2	3		6		5			1		4			3		1			1				1		1	1	9			
Indiana	94								1		1		49		2	1	10			1		4	1	1	3					1		3		1	4			3			3	1	1			2	1					
Iowa	56				1						1		21				1						3		6		15		1					2				2				1				2						
Kansas	64			1					1				12	1	4		1	1			1	1			23		7							1	2		2				1				1	3	1				
Kentucky	21										1		2	2						1				1	3								1	3			1								1						
Louisiana	12	2		2							2							2		1		2																														
Maine	6												1																	2												3									
Maryland	57				1			15		4			3				2			1		1	2		1					2			1					6		2		1	1		2	2	10				
Michigan	126	1		1	2			1	1		2		20	8	3		5		1	4	3		3			3			1		14	1			21			5			13				3		3	4			
Minnesota	84				1	1			1				16		9	1		1		1		6		1	1								2	2						1	1							3		34		1	
Mississippi	17	2		1									2				3	5																	1	1					2											
Missouri	60			2		1							18	2	2	13	4	3		1			2	1			5								1					1					1	3					
Montana	1																																															1					
Nebraska	48			2							1		11	1	4	10				1	2		2		4								2		1	2		2		1	1							1				
Nevada	17				3	1							2						1			1			1		1		1				1				5					1										
New Hamp.	15																1			1	9												1				2				1										
New Jersey	133				2		1	2	3	2			1				1		1		3	3	7										68	3		2	1	16			3	1	1	4	2		4	1				
New Mexico	4			1													1								1																	1										
New York	72	1			3		1	1					6	3		1	1	2	1	2	2				3								10			16		1	4				1	6		1			1	4
No. Carolina	44								1		5							2			2	3	2		2								3			3		1	3		5	1		7				2	1	1
No. Dakota	15												6										7		1																								1		
Ohio	132	5				1			3				18	9	4		4	1	1	6		8	1		10		2			2		18				1		18				4	1	3	4		7	1			
Oklahoma	57			13						5			1	1	1	5	1	1				1		1	7		2			3		1		1				6	6								1			
Oregon	4				2							2																																							
Penns'vania	28					1		1					2							1	4					1						3																	15		
So. Carolina	8										5														1								1																		
So. Daktoa	11																						7											4																	
Tennessee	1																																																1			
Texas	168	3		28	1	1			3		9		14	5	3	9	7	13		1	2	4	1	2	12		2	2		2		3			3	6		3		1	1	16			1	2		2			4	1		1
Utah	14					1							5				1								2					1								2					1									1
Vermont	2																		1																																		
Virginia	30								1								1				3	1	1										3	4		1	1						4			8				
Washington	103				3						1	7	23	3	9	2	4						4	11		5	7	3							7	3			6			1	2						1		1	
W. Virginia	54					1			1		2		2				7	1		6			1	1	1									1		5		4					13								
Wisconsin	60												8		1										3								2		3			2		1								40			
Wyoming	25		1						1				9	1	3	1									1		3											2				1										
Alaska	2																																																		
Totals	2458	32	6	58	23	13	9	6	37	3	47	11	367	52	88	65	68	43	16	62	59	58	66	17	143	17	71	9	5	27	3	163	15	25	98	26	18	123	1	11	15	102	33	22	18	59	23	41	35	7	108	18	8	8
Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53

This table shows the number of physicians registered by each state through reciprocity during 1920. Read from left to right, it shows the total number of physicians registered through reciprocity in the state named and the number of such candidates coming from each of the states named at the top of the various columns. Read from above downward, the figures show the number of physicians who left the state named at the head of the column and went to each of the states named in the corresponding lines, and at the bottom the total number of candidates leaving the state to go elsewhere. For example, read from left to right the table shows that Maine registered 6 candidates through reciprocity in 1920 and that, of these candidates 1 came from Illinois, 2 from New Hampshire and 3 from Vermont. Read from above downward the table shows that from Maine 1 candidate each when to Michigan, Nevada, New Hampshire, New York, Ohio, Pennsylvania and Vermont, 2 each went to California, Georgia and Illinois and 3 went to Iowa. The line at the bottom shows in what states physicians who registered through reciprocity obtained their original licenses. The total number licensed by reciprocity was 2,458—one less than in 1919. This total includes 32 osteopaths, 6 in Oklahoma and 26 in Texas who were granted full privileges as physicians and surgeons.

TABLE K.—RECIPROCAL REGISTRATION IN FIVE YEARS (SHOWING WHAT STATES ISSUED ORIGINAL LICENSES)

STATE	Physicians Going from States Named During					Totals
	1916	1917	1918	1919	1920	
Alabama	4	8	12	27	32	83
Arizona	5	6	4	7	6	28
Arkansas	56	41	24	72	58	251
California	2	2	5	14	23	46
Colorado	8	14	10	22	13	67
Connecticut	1	0	2	12	9	24
Delaware	8	4	11	8	6	37
District of Columbia	20	16	14	30	37	117
Florida	2	1	2	2	3	10
Georgia	30	28	10	38	47	153
Idaho	5	4	0	7	11	27
Illinois	178	176	125	325	367	1171
Indiana	27	22	30	57	52	188
Iowa	32	44	40	71	88	275
Kansas	33	32	28	75	65	233
Kentucky	40	44	31	71	68	254
Louisiana	16	13	5	36	43	113
Maine	13	8	8	18	16	63
Maryland	45	34	25	61	62	227
Massachusetts	22	20	10	36	59	147
Michigan	34	42	24	69	58	227
Minnesota	19	28	20	27	66	160
Mississippi	18	59	11	48	17	153
Missouri	93	84	65	144	143	529
Montana	1	1	1	8	17	28
Nebraska	28	49	36	60	71	244
Nevada	7	5	7	8	9	36
New Hampshire	11	7	4	24	5	51
New Jersey	17	16	15	30	27	105
New Mexico	2	2	6	9	3	22
New York	84	83	74	197	163	601
North Carolina	17	9	16	24	15	81
North Dakota	4	13	4	17	25	63
Ohio	51	43	27	73	98	292
Oklahoma	26	17	28	53	26	150
Oregon	2	3	7	15	18	45
Pennsylvania	74	62	57	113	123	429
Rhode Island	1	3	1	4	1	10
South Carolina	7	7	4	5	11	34
South Dakota	3	3	6	3	15	30
Tennessee	65	67	34	124	102	392
Texas	15	20	23	38	33	129
Utah	16	13	6	17	22	74
Vermont	15	13	7	25	18	78
Virginia	36	42	26	61	59	224
Washington	12	10	12	21	23	78
West Virginia	25	24	16	41	41	147
Wisconsin	32	28	13	51	35	159
Wyoming	1	4	4	6	7	22
U. S. Territories and Possessions	1	1	1	4	8	15
Army, Navy, P. H. Service	1	1	10	130	108	250
Natl. Bd. of Med. Exam.	....	2	1	19	18	40
Foreign and Misc.	6	1	....	2	8	17
Totals	1271	1279	972	2459	2458	8439

This table shows that 8,439 candidates were registered through reciprocity during the last five years. In 1918 there was a marked decrease due largely to the war. In 1919 there was an increase of 1,487 due to a large migration following the return from military service, and in 1920 there was a decrease of one in the total registered. It will be noted that 130 were registered in 1919 on this basis. A study of the totals for the different states shows that of the 8,439 registered during the five years 1,171, or 13.9 per cent., obtained their original licenses in Illinois. New York could easily lead Illinois but reciprocal relations have been established with only six other states.

whom had been in practice for ten or more years—would have been compelled to undergo the ordeal of a second trying examination.

Table K shows in what states were granted the original licenses of those who were registered elsewhere under the reciprocity provision during the last five years. Of the 8,439 physicians licensed through reciprocity during the last five years, the largest number coming from any one state was 1,171, who obtained their original licenses in Illinois. Although New York has a larger number of medical college graduates each year than Illinois,[1] only 601 physicians obtained original licenses in New York and registered elsewhere through reciprocity in the last five years. This is accounted for by the fact that Illinois has reciprocal relations with twenty-five other states, while New York has established such relations with only six.

IMPROVED STANDARDS OF LICENSURE

Table L shows the states which have adopted one or two years of college work as a minimum standard of preliminary education for those who seek the license to practice medicine

TABLE L.—STATE REQUIREMENTS OF PRELIMINARY EDUCATION

There are now forty states (counting Alaska Ter.) which have adopted requirments of preliminary education in addition to a standard four-year high school education. Of this number 33 now require the two year standard. These states, the number of college years required and the time the higher requirements became or become effective are as follows:

State Examining Board of	One Year of College Work		Two Years of College Work	
	Affects Students Matriculating	Affects All Graduates	Affects Students Matriculating	Affects All Graduates
Alabama	.....	....	1915-16	1919
Alaska	1914-15	1918	1918-19	1922
Arizona	1914-15	1918	1918-19	1922
Arkansas[1]	1915-16	1919	1918-19	1922
California	1915-16	1919	.....	....
Colorado	1908-09	1912	1910-11	1914
Connecticut	1911-12	1915	.....	....
Delaware*	.....	....	.....	....
District of Columbia†	.....	....	.....	....
Florida[1]	1914-15	1918	1918-19	1922
Georgia*	.....	....	1918-19	1922
Idaho*	.....	....	.....	....
Illinois	1915-16	1919	1918-19	1922
Indiana	1910-11	1914	1911-12	1915
Iowa	.....	....	1911-12	1915
Kansas	1910-11	1914	1918-19	1922
Kentucky	1914-15	1918	1918-19	1922
Louisiana	1915-16	1919	1918-19	1922
Maine	1915-16	1919	.....	....
Maryland	1914-15	1918	1918-19	1922
Massachusetts†	.....	....	.....	....
Michigan	1914-15	1918	1918-19	1922
Minnesota	.....	....	1908-09	1912
Mississippi	1915-16	1919	1919-20	1923
Missouri*	.....	....	.....	....
Montana	1914-15	1918	1918-19	1922
Nebraska*	.....	....	.....	....
Nevada*	.....	....	.....	....
New Hampshire	1914-15	1918	1915-16	1919
New Jersey	1915-16	1919	1917-18	1921
New Mexico	1914-15	1918	1918-19	1922
New York	1917-18	1921	1918-19	1922
North Carolina	1914-15	1918	1918-19	1922
North Dakota	.....	....	1908-09	1912
Ohio*	.....	....	.....	....
Oklahoma	1914-15	1918	1917-18	1921
Oregon†	.....	....	.....	....
Pennsylvania	1914-15	1918	.....	....
Rhode Island	1914-15	1918	1918-19	1922
South Carolina	.....	....	1918-19	1922
South Dakota	1908-09	1912	1911-12	1915
Tennessee	1916-17	1920	1918-19	1922
Texas	1914-15	1918	.....	....
Utah	1913-14	1917	.....	....
Vermont	1913-14	1917	1918-19	1922
Virginia	1014-15	1918	1917-18	1921
Washington	1914-15	1918	1918-19	1922
West Virginia	1917-18	1921	.....	....
Wisconsin	.....	....	1915-16	1919
Wyoming†	.....	....	.....	....

* Require a four-year high school education or its equivalent.
† No fixed standard.
1. The higher standards in Arkansas and Florida are evidently not enforced by the sectarian licensing boards of those states.

in those states. The first and third columns show, respectively, when the one year and the two years of premedical college work affects students matriculating in medical colleges, and the second and fourth columns give the years in and after which all applicants for licenses in the various states are affected by the increased requirements. This table shows the rapidity with which state board requirements of preliminary education have been advanced since 1908, prior to which no state was requiring more than a four-year high school education. As will be noted, there are now forty states which have adopted the higher standard, and thirty-three of these require as a minimum two years of premedical college work. It is understood that in every instance the one or two years of collegiate work must have included courses in physics, chemistry and biology. As shown in the footnotes, in the District of Columbia, Massachusetts, Oregon and Wyoming no standards of preliminary education have been fixed.

1 THE JOURNAL, Aug. 7, 1920, p. 387, Table 11.

TABLE M.—ADVANCES IN STATE LICENSE REQUIREMENTS IN SEVENTEEN YEARS

Requirement or Provision	States Having Provision for			States Still Having No Provision for
	1904	1921	Increase	
Preliminary Education—				
Any requirement	20	47	27	3[1]
A standard four-year high school education or higher	10	45	35	5[2]
One year or more of college work	0	40[3]	40	10[3]
Two years of college work as a minimum	0	33[3]	33	17[3]
That all applicants be graduates of a medical college	36	49	13	1[4]
That all applicants undergo an examination for license	45	49	4	1[5]
Requirement of practical tests in the license examinations	1	16	15	34
Hospital intern year required	0	10[6]	10	40
Full authority by board to refuse recognition to low-grade colleges	14	44	30	6[7]
Boards refusing to recognize low-grade colleges	5	44[8]	39	6[9]
Reciprocal relations with other states	27	44	17	6[10]
Single boards of medical examiners	36	44	8	6[11]

1. District of Columbia, Massachusetts and Wyoming.
2. Idaho, Oregon and the states named in Footnote 1.
3. See Table L.
4. Colorado.
5. New Mexico.
6. Pennsylvania, 1914; New Jersey, 1916; Alaska, 1917; Rhode Island, 1917; North Dakota, 1918; Washington, 1919; Illinois and Michigan, 1922; Iowa, 1923, and Texas, 1924.
7. District of Columbia, Massachusetts, Missouri, Utah, Washington and Wyoming.
8. In three states, Arkansas, Connecticut and Florida, each of which has three separate boards, only the regular (nonsectarian) boards have refused recognition to low standard medical colleges and have enforced higher standards of preliminary education.
9. The states named in Footnote 7.
10. Alaska, Arizona, Connecticut, Florida, Massachusetts, Rhode Island. To this list should be added the outlying territories of Canal Zone, Philippine Islands and Porto Rico, which have no provision for reciprocity.
11. Multiple boards still remain in Arkansas, Connecticut, District of Columbia, Florida, Louisiana and Maryland.

In Table M the advance in standards of licensure is shown for all states since 1904. The most marked increase is in regard to the requirement of collegiate work in forty states as referred to in Table L. The next greatest increase (thirty-seven) is in the number of states—now forty-four—which are refusing to recognize low-grade medical colleges. A recent amendment to the practice act of Missouri takes away from the board the authority to refuse recognition—a decidedly backward step in that state. Although, as shown in the third column, marked improvements have been made in state requirements for licensure, nevertheless, as indicated by the last column, there is still room for further improvement. The greatest needs are for a wider adoption of the requirement of the hospital intern year, the standard of two years of premedical college work, and—a matter of more vital importance—a more general and larger use of practical tests in the examinations. The states in which the boards are making really effective use of such examinations are Illinois, Massachusetts, Minnesota, North Dakota, Ohio and South Dakota. They are being followed to a greater or less extent in a few other states.

RECOGNITION OF GOVERNMENT EXAMINATION

The examination given under federal authority, which should be generally recognized by all state licensing boards

as a qualification for license to practice medicine, is that given to medical officers of the United States Army, Navy, and Public Health Service. In fact, retired officers from the services mentioned are now eligible to receive licenses without further examination in

Alabama	Illinois	Virginia
California	North Dakota	Wisconsin
Colorado	Porto Rico	

This has been interpreted in most of the above states to apply only to those who were admitted to the government services under the strict examination which prevailed prior to the entrance of the United States in the World War and not to those who were commissioned after the admission requirements were relaxed. In Wisconsin, however, 76 physicians were licensed following their discharge from the government services. In Minnesota in April, 1919, a special law was enacted empowering the licensing board to register without examination physicians who had been in the government medical service overseas. Pennsylvania and Virginia licensed, respectively, 19 and 11 government medical officers following their discharge.

National Board of Medical Examiners

The National Board of Medical Examiners, which was organized in 1915, consists of fifteen members, including the Surgeon-Generals of the Army, Navy and Public Health Service, and one other representative of each of those services, three representatives of the state medical licensing boards and six members appointed at large. Up to March 15, 1921, nine examinations have been held as follows:

Date of Examination	Where Held	Total Examined	Passed	Failed	Percentage Failed
Oct., 1916	Washington	10	5	5	50.0
June, 1917	Washington	12	9	3	33.3
Oct., 1917	Chicago	28	22	6	21.5
Jan., 1918	New York	20	18	2	10.0
Apr., 1918	Ft. Riley, Ft. Oglethorpe	23	18	5	26.1
Dec., 1918	Chicago, New York	16	15	1	6.3
June, 1919	Philadelphia	52	51	1	1.9
Feb., 1920	Chicago, St. Louis	48	36	12	25.0
May, 1920	Philadelphia	60	46	14	23.3
Feb., 1921	Rochester, Minn.	16	11	5	31.3
	Totals	285	231	54	19.0

Thirty-nine medical schools were represented and the results were as follows:

College	Total Examined	Passed	Failed	Percentage Failed
Boston University School of Medicine	1	1	0	0.0
Columbia Univ. Coll. of P. and S.	11	11	0	0.0
Cornell Univ. Med. College	4	4	0	0.0
Emory Univ. School of Med.	1	1	0	0.0
Georgetown University	1	1	0	0.0
George Washington University	1	0	1	100.0
Harvard University Med. School	11	11	0	0.0
Howard Univ. School of Med.	1	0	1	100.0
Indiana Univ. School of Medicine	2	1	1	50.0
Jefferson Medical College	7	2	5	71.4
Johns Hopkins Univ. Med. Dept.	21	19	2	9.5
Leland Stanford Jr. University	1	1	0	0.0
Marquette University	1	1	0	0.0
McGill Univ. Faculty of Med.	1	0	1	100.0
Northwestern Univ. Med. School	23	18	5	21.7
Rush Medical College	56	49	7	12.5
State Univ. of Iowa Coll. of Med.	5	2	3	60.0
Syracuse University	1	1	0	0.0
Tulane University	1	1	0	0.0
Univ. and Bellevue Hosp. Med. College	1	0	1	100.0
University of Buffalo Med. Dept.	1	1	0	0.0
University of California Med. School	1	1	0	0.0
University of Colorado Sch. of Med.	1	1	0	0.0
University of Georgia	1	1	0	0.0
University of Illinois	3	1	2	66.6
University of Maryland Sch. of Med.	2	2	0	0.0
University of Michigan Med. School	6	4	2	33.3
University of Minnesota Med. School	11	4	7	63.6
University of Nebraska Coll. of Med.	2	1	1	50.0
University of Pennsylvania Sch. of Med.	86	76	10	11.6
University of Pittsburgh Sch. of Med.	1	1	0	0.0
University of Texas Dept. of Med.	4	3	1	25.0
University of Utrecht	1	1	0	0.0
University of Virginia Dept. of Med.	2	1	1	50.0
Vanderbilt University	2	0	2	100.0
Washington University	4	4	0	0.0
Western Reserve Univ. School of Med.	2	1	1	50.0
Woman's Medical College	3	3	0	0.0
Yale University School of Med.	1	1	0	0.0
Totals	285	231	54	19.0

Holders of certificates from the National Board of Medical Examiners will be registered without further examination in the following twenty states:

Alabama	Kentucky	North Dakota
Colorado	Maryland	Pennsylvania
Delaware	Minnesota	Rhode Island
Florida	Nebraska	South Carolina
Georgia	New Hampshire	Vermont
Idaho	New Jersey	Virginia
Iowa	North Carolina	

When the permanence of the National Board of Medical Examiners is established and the high character of its examinations is more generally recognized, it is quite probable that its certificate will be recognized by the licensing boards of a larger number, if not of all states.

A holder of the National Board certificate is eligible for the regular medical corps of the United States Army or the United States Navy without further professional examination if a review of his examination papers by the board of examiners of those services is satisfactory. During the summer of 1920 several English and French physicians, as guests of the National Board, visited a number of the medical schools and attended the examination held by the board in Philadelphia in May, 1920. Since that time a recommendation has been adopted by the Triple Qualification Board of Scotland providing that holders of the National Board certificate be admitted to the final examination of that Board. In January, 1921, action was taken by the Conjoint Examining Board of England.

In Conclusion

In the publication of these statistics, the endeavor has been to present the facts, a knowledge of which is always beneficial. We reiterate our acknowledgments to the state licensing boards for their ready cooperation and the complete reports which have been furnished. We believe the information here published will be of service to the medical colleges, to the state boards and also to the public.

Proportion of Physicians to Population

State	Population	Physicians	People to Each Physician
Alabama	2,348,174	2,405	976
Arizona	333,903	380	877
Arkansas	1,752,204	2,450	715
California	3,426,861	6,766	506
Colorado	939,629	1,817	517
Connecticut	1,380,631	1,720	798
Delaware	223,003	262	851
District of Columbia	437,571	1,689	259
Florida	968,470	1,281	754
Georgia	2,895,832	3,406	850
Idaho	431,866	553	781
Illinois	6,485,280	10,651	609
Indiana	2,930,390	4,446	659
Iowa	2,404,021	3,536	680
Kansas	1,769,257	2,550	694
Kentucky	2,416,630	3,323	727
Louisiana	1,798,509	2,001	898
Maine	768,014	1,105	695
Maryland	1,449,661	2,364	613
Massachusetts	3,852,356	5,959	646
Michigan	3,668,412	4,593	798
Minnesota	2,387,125	2,628	908
Mississippi	1,790,618	1,761	1,016
Missouri	3,404,055	5,921	575
Montana	548,889	620	883
Nebraska	1,296,372	1,985	659
Nevada	77,407	147	527
New Hampshire	443,083	641	691
New Jersey	3,155,900	3,260	968
New Mexico	360,350	529	681
New York	10,384,829	16,284	638
North Carolina	2,559,123	2,236	1,143
North Dakota	645,680	556	1,161
Ohio	5,759,394	8,092	712
Oklahoma	2,028,283	2,622	773
Oregon	783,389	1,145	684
Pennsylvania	8,720,017	11,248	768
Rhode Island	604,397	778	777
South Carolina	1,683,724	1,452	1,160
South Dakota	636,547	658	966
Tennessee	2,337,885	3,328	702
Texas	4,663,228	6,205	751
Utah	449,396	496	906
Vermont	352,428	594	593
Virginia	2,309,187	2,545	906
Washington	1,356,621	1,797	755
West Virginia	1,463,701	1,717	852
Wisconsin	2,632,067	2,750	957
Wyoming	194,402	267	728
Totals	105,708,771	145,608	725

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SATURDAY, APRIL 30, 1921

STATISTICS OF THE STATE BOARD EXAMINATIONS

We publish this week, for the eighteenth consecutive year, statistics based on official reports of examinations conducted by state medical boards, and of registrations by reciprocity and other methods. During these eighteen years the work has met with an increasing support and cooperation on the part of the secretaries of the state licensing boards, who have furnished reports of their examinations. The reports have been carefully checked with alumni lists furnished by the deans of the medical colleges, and by this cross-checking, errors have been corrected and the state boards concerned have been notified. Thus, not only are the statistics accurate and reliable, but also state board records have been corrected. We express our acknowledgments for the cooperation of the officers of both the state licensing boards and the medical colleges by which the publication of these statistics has been made possible.

IMPORTANCE OF THESE STATISTICS

These statistics are of great importance, as they relate to medical education and to medical licensure. For each state they show the number and qualifications of physicians admitted to examinations; the character of the colleges from which they graduated; the numbers registered or rejected, and the percentage rejected. The material is so arranged that the facts regarding any one college or any one state can be compared with those, respectively, of all other colleges and states. The statistics show that in some states people are well protected against illiterate and incompetent physicians, while in others, in varying degrees, the opposite situation prevails. A glaring instance relates to Arkansas, where, for a series of years, the regular board of medical examiners has been enforcing reasonably high educational standards; nevertheless, graduates of low grade medical colleges have been licensed. This was because of the existence of a separate board of eclectic examiners which this year licensed twenty-six graduates of a nominally eclectic medical school, the Kansas City College of Medicine and Surgery, even though the college was reported not recognized by the licensing board of Missouri—its home state—and by the boards of thirty-nine other states. This has been going on for several years. The statistics show that in twelve states, although the boards will not admit graduates of certain low type colleges to their examinations, they have granted them licenses by reciprocity.

LICENSING OSTEOPATHS

During the last four years a few boards have examined osteopaths and licensed them as physicians. The objection to this is not that these candidates were osteopaths, but that their educational qualifications were inferior to those which physicians are required to possess. All reputable medical colleges require for admission two years of college education in addition to a high school course. Not so the osteopathic colleges, no one of which has announced a requirement for admission of more than a nominal high school education. Nevertheless, twelve osteopaths were licensed as physicians in California by examination, seventeen in Colorado, and two each in Oklahoma and Utah; and in Texas, twenty-six were licensed by reciprocity.

QUALIFICATIONS OF PHYSICIANS LICENSED

Special attention is called to Table I (page 1245), which shows the classification of the medical colleges from which the applicants graduated. This table shows in what states and in what numbers graduates of low grade medical colleges are being licensed. A review of these tabulations for the last four years shows that California registered 295, the largest number, followed by Illinois with 132, Missouri with 129, Arkansas with 111, and Texas with 110. In Missouri the numbers were greatly diminished during the last two years; but with the weakening of the practice act from a recent amendment, the numbers will probably be again increased.

EFFECTS OF PUBLICITY

The effectiveness of publicity in medical licensure may be noted in Table M, on page 1247. Higher standards of preliminary education have been adopted; all states but one, Colorado, require that applicants must have graduated from a medical school; all but one state, New Mexico, now require an examination of all applicants; a larger number of states have improved their examination by the use of practical laboratory and clinical tests; a larger number of states have obtained authority to refuse recognition to low-grade medical colleges and are making use of that authority; reciprocal relations between states have been widely extended; ten states require a hospital internship as an essential for the license, and all but a few states now have single boards of medical examiners.

EFFECTS ON MEDICAL EDUCATION

On medical education the effect of these statistics has been even more pronounced. Publicity regarding the percentages of failures of graduates at state licensing examinations has led to the adoption of better methods of teaching. Publicity of the fact that in certain states

diplomas granted by various colleges were not recognized as an acceptable qualification for the license has induced a number of medical schools to make improvements in order to retain students. That such improvements have been made is shown by the increased number of colleges each year which are recognized in all states.

Briefly, these statistics show each medical school what improvements are essential if its graduates are to succeed in state board examinations; what state boards are requiring as a minimum of preliminary education, and in what states the boards are refusing to examine its graduates. To each state board these statistics show the qualifications of the physicians licensed as compared with those licensed in other states, and the lines along which further improvements are needed in its educational standards and methods of examination. Owing to political conditions and other factors, standards in certain states swing forward and then backward; on the whole, however, there has been decided progress. Constant publicity has led to a general improvement and a greater uniformity in the methods of examination by all state boards; there has been a lessened confusion in the licensing of physicians throughout the country, and correspondingly better safeguards for the public against the licensing of incompetent practitioners.

EVENTS FOLLOWING THE INTRAVENOUS INJECTION OF PARTICULATE MATERIAL

The ultimate fate of food substances and of foreign particles in the blood, although studied by many different methods, is still unknown. Perhaps the nearest approach to the solution of a part of this problem has been made by studying the fate of certain inert substances injected into the blood. Recently Nagao,[1] working in the McCormick Institute for Infectious Diseases, observed that India ink granules, injected intravenously into rabbits, are adsorbed by what he terms a "base" granule of the leukocytes or fixed phagocytic cells. The ink granules appear to form a capsule around the base granule; this is soon followed by the degeneration of the base granule and finally of the whole cell. Cells with the most ink granules degenerate first, and after twenty-four hours very few may be found containing more than ten granules. Leukocytes containing ink granules become less active, and appear unable to pass through the capillary walls or to eliminate the ink granules except as they themselves disintegrate. The number of polymorphonuclear leukocytes containing ink granules is greatly reduced in forty-eight hours, and such cells disappear entirely in from four to seven days. The degeneration of leukocytes begins from three to six hours after the ink has been injected, and a few hours later abnormal forms appear, myelocytes and metamyelocytes, indicating a rapid destruction of large numbers of leukocytes. Endothelial cells containing ink granules also undergo degeneration in increasing degree until the third or fourth day, when the degeneration gradually becomes less. The degenerating leukocytes with included granules are taken up by fixed cells, especially in the liver and spleen, which cells in turn also degenerate in a few days. The granules finally accumulate irregularly in these organs, or are carried away by the lymphatics to various parts of the body. The irregular distribution of ink granules in the liver suggests that degeneration of endothelial cells containing ink causes defects in the capillary walls and allows the granules to escape into the lymph spaces. Fixed phagocytic cells containing ink disintegrate naturally, but their destruction may be hastened by injecting bacteria or products of bacterial growth, as shown by the fact that, twenty-four hours after such injections, ink granules again appear in the blood. It was found also, by injecting other substances before or after the India ink, that the phagocytic activity of the endothelial cells is greatly reduced twenty-four hours after the injection of particles.

Recently [2] it was suggested that the immediate removal of bacteria in the blood is not essentially different from that of inert particulate material. Reference was made then to the work of Drinker and Shaw [3] in which it was shown that the greater part of finely divided manganese dioxid injected intravenously into cats could be recovered an hour later from the lungs, liver and spleen. These investigators conclude that the vascular endothelium of certain organs possesses phagocytic power and renders the capillaries permeable to particulate material as well as to gases, liquids and dissolved substances. Lund, Shaw and Drinker [4] have observed also that manganese dioxid, an hour after intravenous injection, is localized for the most part in the liver of rabbits, guinea-pigs, dogs, rats, chickens and turtles. These animals do not show the stage of deposition in the lungs as in the cat.

From these studies it appears that various particles are ingested finally by vascular endothelial cells, and that the elimination of such materials from the body is accomplished through the intervention of these phagocytic cells, the vascular endothelium of the liver playing perhaps the more important part in this connection. The endothelium, either through its phagocytic power alone, or more likely through the degeneration following its phagocytic activity, may be the cause of capillary permeability to particles. The observations of Nagao suggest that a second injection following within a few hours after a primary injection of particulate material

1. Nagao, K.: The Fate of India Ink Injected into the Blood, II, The Formation of Intracellular Granules and Their Movements, J. Infect. Dis. **28**: 294 (March) 1921.

2. The Fate of Foreign Particles in the Blood Stream, editorial, J. A. M. A. **76**: 794 (March 19) 1921.

3. Drinker, C. K., and Shaw, L. A.: Quantitative Distribution of Particulate Material Administered Intravenously to the Cat, J. Exper. Med. **33**: 77 (Jan.) 1921.

4. Lund, C. C.; Shaw, L. A., and Drinker, C. K.: Quantitative Distribution of Particulate Material (Manganese Dioxide) Administered Intravenously to the Dog, Rabbit, Guinea-Pig, Rat, Chicken and Turtle, J. Exper. Med. **33**: 231 (Feb.) 1921.

may be a source of danger to the host, since large numbers of leukocytes are destroyed by the primary injection, and many of the remaining leukocytes contain particles which considerably reduce their activity. May not the failure of the body to rid itself of bacteria in certain chronic infections in which there may be frequent showers of bacteria into the blood be due to similar conditions? Further studies of this kind may throw additional light on the rôle of the vascular endothelium in controlling infection.

IMMUNOLOGIC DISTINCTIONS OF ENCEPHALITIS AND POLIOMYELITIS

The statistics which are being collected with respect to epidemic encephalitis indicate that it is quite prevalent throughout the world at the present time.[1] While its cause has not been ascertained, the large number of cases that are being studied by clinicians have made the symptoms and sequelae better understood. As a consequence of this increasing knowledge, many features of resemblance if not actual identity have been established between encephalitis and other paralytic epidemic affections, notably poliomyelitis. The question has even been raised as to whether the various affections may not be different manifestations of one "etiologically simple malady."[2]

In defense of the individuality of epidemic encephalitis and epidemic poliomyelitis, respectively, various contentions have been raised. There seems to be an unlike seasonal incidence; but this factor can never be given more than corroboratory dignity in discussions of this sort. Again, there are apparent differences in communicability as well as divergent clinical manifestations. Nevertheless, when trained clinicians sometimes hesitate to make a final differential diagnosis, the uncertainty of the inexpert may be pardoned.

Amoss[3] of the Rockefeller Institute for Medical Research has lately furnished more convincing immunologic evidence of distinctions between encephalitis and poliomyelitis. The blood serum in convalescent cases of poliomyelitis, whether in man or in the monkey, possesses the power to neutralize the virus of this disease, while the serum of convalescents from encephalitis is devoid of it. On this ground the maladies may be regarded as "integrally distinct affections." Amoss defines encephalitis as an epidemic disease, the main manifestations of which relate to injury inflicted on the central nervous system and in particular the basal ganglions of the brain; whereas in poliomyelitis the gray matter of the spinal cord and medulla oblongata especially are involved.

Although it has been regarded as doubtful whether encephalitis has been communicated to monkeys through inoculation with the affected central nervous tissue of man in the way that readily succeeds in the case of poliomyelitis, the reports recently reviewed in THE JOURNAL[4] warn us to keep an open mind. Even if it shall be conclusively shown that encephalitis is another epidemic disease which can be transmitted by secretions of the nasopharynx, the studies of the serologic reactions now available clearly speak in favor of an individuality rather than an identity of epidemic encephalitis and poliomyelitis.[5]

1. The Pandemicity of Encephalitis, editorial, J. A. M. A. **76**: 1012 (April 9) 1921.
2. Crookshank, F. G.: Boston M. & S. J. **182**: 34 (Jan. 8) 1920.
3. Amoss, H. L.: Immunological Distinctions of Encephalitis and Poliomyelitis, J. Exper. Med. **33**: 187 (Feb. 1) 1921.
4. Experimental Studies of Epidemic Encephalitis, editorial, J. A. M. A. **76**: 932 (April 2) 1921.
5. Levaditi, C., and Harvier, P.: Etude expérimentale de l'encéphalite léthargique, Ann. d l'Inst. Pasteur **34**: 911, 1920.

Current Comment

UNFORTUNATE MISSOURI!

A few weeks ago a bill passed the Missouri legislature which struck out of the medical practice act the word "reputable," as related to medical colleges, and substituted therefor the words "legally chartered." As noted in the news column last week, in spite of vigorous protests against it, the governor signed the measure. Thus at one stroke authority is taken away from the Missouri State Board of Health to perform its most important function—that of protecting the public against incompetent practitioners of the healing art. The words "legally chartered" are entirely without meaning, since the worst diploma mills that ever existed have been chartered. In the majority of states it is easy for any group of individuals, no matter how irresponsible they may be, to secure a "legal charter" and to open a "school," "college" or "university" with full power to grant any or every degree in the category, no questions being asked as to whether they have the essential teachers, buildings or equipment, or the funds necessary to furnish the education usually required for such degrees. The word "reputable," on the other hand, gave the state board authority to enforce reasonably high standards of preliminary and professional education and to refuse recognition to any institution which, on due inspection, was found to be deficient in these respects. As shown in the state board statistics published this week, Missouri for the last few years has stood among the states in which practice acts have been fairly enforced and in which the public has been well protected against incompetent physicians. The present amendment to the practice act places the state in a position as bad as, if not worse than, that which existed twenty or more years ago. It restores Missouri to the rapidly diminishing number of backward or unfortunate states in which the doors to licensure are wide open to the output of the poorly equipped and low-grade, irresponsible institutions which are professing to train practitioners of medicine. In this day of greater educational enlightenment, when the number of states which have closed their doors against the graduates of low-grade medical schools has increased in the last eight years from thirty-two to forty-four states, it is all the more surprising that legislation of this character could be made a law in any of our states. The people of Missouri have our sympathy. In spite

of this handicap the board, by holding a fairly rigid examination, can still do much to weed out the incompetents, if the governor will appoint competent examiners on the board and support them in their work. The results of this law will be watched with much interest.

PROHIBITION AND THE PHYSICIAN

Our profession has been injured in the eyes of the public because a few of its members have not had the moral stamina to live up to the trust placed in physicians by the government agency responsible for the enforcement of the Volstead act. This we presume might have been expected: our profession is composed of human beings with all human frailties. From the very first many thoughtful physicians regretted that the government should have found it necessary to shift some of its responsibility to the medical profession; it was feared that there would be some who would be willing to sacrifice professional honor for financial gain. Unfortunately, developments have justified the fear. And now a recent ruling of the Secretary of the Treasury permitting physicians to prescribe large quantities of beer and wine will tend to aggravate the condition. A little more and the complacent physician will become a substitute for the bartender. A majority of the reputable physicians have from the first refused to take out the permit to prescribe liquor. These have no trouble in disposing of such friends or intimate patients as may wish to abuse the friendship of their medical advisers.

RHUS DERMATITIS

Although the toxicology of poison ivy (*Rhus toxicodendron*) is fairly well understood, the toxic features of the related poison oak (*Rhus diversiloba*) have not been studied to a comparable extent. For the harmfulness of the poison ivy, Pfaff [1] placed the responsibility on a substance isolated from the plant and named toxicodendrol. The latter is insoluble in water, but readily dissolves in the organic solvents like ether and alcohol. The product is so active that 0.005 mg. applied to the skin may suffice to provoke local symptoms with pain. A considerable latent period prior to the appearance of the cutaneous alterations has often been described. Recently McNair [2] has come to the conclusion that a polyhydrophenol, to which the name lobinol has been given, is responsible for the irritation of the skin caused by poison oak. The active substance is neither bacterial nor volatile. Poisoning occurs from actual contact with the resinous sap of the plant; but, as McNair points out, it may result through an intermediary agent, which carries the sap, such as particles of soot in smoke, clothing, cordwood, croquet balls and shoes. As in the case of all rhus dermatitis, the most common avenues of invasion of the poison are connected with the cutaneous surfaces, though the respiratory and alimentary tracts may also play a part at times in promoting intoxication with poison oak. The problem of latency has not been solved. With respect to the mechanism by which the dermatitis is spread so that it appears successively on different areas of the body, McNair has ventured several hypotheses. Thus, it may be due to (1) the direct transference of the poison itself by the fingernails or hands from one part of the body to another, or to new areas from the clothes or hair; (2) reflex irritation; (3) contiguity of tissue, and (4) varying durations of latency for the different skin surfaces on the body (varying with the respective thicknesses of their stratum corneum, chemical and physical differences in the skin, etc.). Perhaps further study will show an essential identity in the etiology of all forms of rhus dermatitis.

1. Pfaff, F.: J. Exper. Med. **2**: 181, 1897.
2. McNair, J. B.: Pathology of Rhus Dermatitis, Arch. Dermat. & Syph. **3**: 383 (April) 1921; J. Am. Chem. Soc. **43**: 159 (Jan.) 1921; J. Infect. Dis. **19**: 419 (Sept.) 1916.

HENRY P. HYNSON, THE PHARMACIST

Henry P. Hynson, whose death was announced in the news columns last week, represented in pharmacy the ideals which the late Dr. E. R. Squibb upheld in the last generation. He devoted his life to advancing pharmacy and to upholding the practical application of his profession. The position which he held was recognized by his confrères, and because of it he was held in honor. In 1907, the *Druggists' Circular*, in speaking of his place of business, said it was "one of the few ethical ones in the country." He was the first president of the National Association of Retail Druggists. As already suggested, his constant effort was to emphasize as of primary importance the service which the educated scientific pharmacist was in a position to render to the public, and to decry the commercial ideas which seemed to be strangling the professional instincts of the pharmacists. He opposed commercial drug store exploitation of the public with "patent medicines" and making pharmacy a mere adjunct to the sale of soda water, light lunches and novelties. Hynson was one of the few prominent pharmacists who were willing to forego financial gain in order to raise the ethical standards of a profession which he honored. He took an earnest interest in all the live pharmaceutical questions of the day, and pure pharmacy sustained a great loss in his death.

BENZYL BENZOATE

Benzyl benzoate has been widely accepted, chiefly on the basis of experiments on excised organs, as an efficient antispasmodic agent for smooth muscle in various regions. Few observations have been made, however, as to its actions on intact organs. Recently, Mason and Pieck,[1] of the pharmacologic laboratory of the University of Cincinnati, have raised serious doubts as to the efficiency of benzyl benzoate as an antispasmodic for the intact uterus, intestine, stomach and bronchi. They injected large (extratherapeutic) doses of benzyl benzoate intravenously into dogs so that the drug might act on smooth muscle of these organs promptly and in efficient form. Almost totally negative results were obtained on both the untreated and the previously excited organs, whereas epinephrin in from one four thousandth to one seven hundredth of the dosage under the same conditions gave prompt and posi-

1. Mason, E. C., and Pieck: J. Lab. &Clin. Med. **6**: 62 (Nov.) 1920.

tive results, i. e., relaxation of both the untreated and excited organs (intestine, stomach and bronchi). According to Macht,[2] benzyl benzoate is conjugated with glycocoll in the body, and, therefore, rendered physiologically inactive. This would be true after oral administration of the ester. If the conjugation is accomplished exclusively by the kidney, the unchanged ester should be present in the blood in part at least, and exert a physiologic action per se. Apparently, however, the concentration in the blood would have to be higher than that used in the experiments of Mason and Pieck. Accordingly, the therapeutic rôle of benzyl benzoate in the treatment of colic by relaxation of smooth muscle appears not so promising as was anticipated from the earlier experimental and clinical literature. What proportion of the alleged benefits in patients may be of reflex origin from the local irritant effects of the benzyl benzoate or solvents used, especially after repeated and large doses, is still a question. The presence of local irritation appears to be indicated by the burning sensation and eructations after swallowing the ester. Certainly this new work suggests that allowances be made for impressions, reflex influences, the psychic state and natural recovery, before drawing definite conclusions as to the beneficial effects of benzyl benzoate, especially in such capricious conditions as hiccup, whooping cough, asthma and dysmenorrhea, for which it has been advocated.

Association News.

THE BOSTON SESSION

Important Notice Regarding Registration

Be sure to take with you to the Boston Session your pocket card certifying to your being a Fellow in good standing for 1921. If you have not received your pocket card for this year, you should write at once to the American Medical Association, 535 North Dearborn Street, Chicago, in order that you may secure this credential.

Identification Certificates for Special Round Trip Fare to Boston

Members who desire to take advantage of the special round trip railroad fares which have been announced for the annual session of the American Medical Association at Boston should write, enclosing a self-addressed, stamped envelop, to the Secretary of the Association, 535 North Dearborn Street, Chicago, requesting Identification Certificates. Reduced fares can be secured only by members who hold these Identification Certificates. With one certificate a member may purchase tickets for himself and for dependent members of his family. The same route must used going to and returning from Boston. In the Trunk Line and Central Passenger Associations, these tickets will be on sale June 1 to 5 inclusive, and may be validated for return trip, June 3 to 11 inclusive. The original starting point must be reached by midnight of June 14. For time limits from points in the Western Passenger Association territory see THE JOURNAL, April 9, page 1013.

Banquet for Visiting Women Physicians

The Local Committee of Arrangements announces that arrangements are being made for a banquet for women physicians who attend the Boston Session. The dinner will be given at the Hotel Vendome at 6 o'clock, Wednesday evening, June 8; cost per cover, $3. Those who plan to attend are requested to advise Dr. Florence W. Duckering, 230 Beacon Street, Boston, on or before June 1.

2. Macht, D. I.: Pharmacological Study of Benzyl Esters, J. Pharmacol. & Exper. Therap. 11: 419 (July) 1918.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Health Unit for Morgan County.—Through the efforts of the Morgan County Medical Society, the central labor union of Alabama and Decatur, the Albany Chamber of Commerce, the women's clubs and other citizens, the health unit will be maintained in Morgan County.

Society for Mental Hygiene.—At a meeting held in connection with the recent Alabama Educational Association convention the state society for mental hygiene was reorganized with Dr. William D. Partlow, Tuscaloosa, as president. Funds having been appropriated by the last legislature, a new home for the feebleminded will be built near Tuscaloosa.

Inspection of Health Work.—A detailed survey of all the activities of the health department and all health work in Birmingham is being made for the American Public Health Association under the direction of experts detailed from the public health service. Housing, street cleaning and garbage disposal in Birmingham are also being investigated in relation to the health department.

ARIZONA

State Medical Meeting.—The meeting of the Arizona State Medical Association, which convened at Tucson, April 15 and 16, was the most successful ever held in the state. Almost 50 per cent. of the state membership was in attendance. Papers by Drs. Albert J. Ochsner, Chicago; E. Avery Newton, Harland Shoemaker, Albert Soiland, Roy Thomas, W. J. Stone, Los Angeles, and G. B. Gilbert of Colorado Springs contributed to the scientific program.

ARKANSAS

Health Agencies Convention.—Dr. Frances Sage Bradley of the Children's Bureau, Washington, D. C., spoke on child welfare, and Dr. John Stewart, superintendent, State Tuberculosis Sanatorium, Booneville, discussed the needs of better hospital facilities in Arkansas at the annual meeting of the state public health association, held, April 28-29, at Little Rock.

"Health on Wheels."—At the request of the recently organized children's bureau of the state board of health, the Children's Bureau of the United States Labor Department sent the "Child Welfare Special" motor truck to tour the state and awaken the rural communities to the need for better physical and mental development of children and to promote better medical and nursing service by the establishment of permanent child welfare centers.

CALIFORNIA

Personal.—Dr. Darius Todd, professor of biology, Medical Department of University of Edinburgh, Scotland, was recently entertained by Dr. Robert B. Dempsey, Vallejo. Dr. Todd will make California his future home and will locate at Napa.

Woman Physician Guilty of Violation of State Medical Law.—Dr. C. Burnley of Huntington Park, it is reported, was convicted of violating the state medical act by operating a sanatorium without a state medical license. According to evidence secured, Dr. Burnley had a license in another state but had failed to secure one in California.

Legislative News.—Two hundred physicians appeared before the senate health and quarantine committee for a discussion of Senator Anderson's bill requiring medical colleges to have laboratory and equipment valued at $200,000 before they may issue degrees.——A meeting of physicians was called to protest against the governor's economy merger plan which would place the professions, including medicine, under a director at a salary of $4,000 a year. The medical profession declared the measure would upset all professional standards, jeopardize the health of the whole state and play havoc with the system of preventive medicine which it has taken years to build up.

Chinese Herbalists Convicted of Illegal Practice.—"Dr." B. Y. Gwan, Chinese herbalist of Marysville, recently convicted on a charge of practicing medicine without a license, was sentenced to pay a fine of $350 or spend 175 days in the county jail. He chose the jail sentence. Quan Kee, herb doctor of Chico, is reported as having been found guilty of practicing medicine without having secured a license. "Dr." W. S. Ling of Oroville, after twenty-five years as a herb doctor, has gone to San Francisco to accept a position as a hotel porter. His change in vocation was made after he had been arrested by federal agents several times during the last few months.

CONNECTICUT

Annual Meeting of Medical Association.—The Middlesex Medical Association held its annual meeting under the presidency of Dr. Jessie W. Fisher, Middletown, April 14, at Middletown. Dr. Peter K. Olitsky, Rockefeller Institute for Medical Research, New York, and Dr. Winnifred O. Wilbur, Springfield, Mass., delivered addresses. The following officers were elected: president, Dr. Thomas P. Walsh; vice president, Dr. James H. Kingman; clerk, Dr. Sheldon S. S. Campbell, all of Middletown.

DISTRICT OF COLUMBIA

Bill to Incorporate Cancer Society.—Provision for the incorporation of the American Society for the Control of Cancer is authorized by a bill introduced in the Senate by Senator Wadsworth of New York.

Personal.—Shepard I. Franz, Ph.D., M.D., LL.D., and Reginald A. Cutting, M.A., Ph.D., respectively, professor and associate professor of physiology at the George Washington University Medical School, have resigned.

New Law Proposed for Medical Licensure.—The existing law relative to the practice of medicine in the District of Columbia is proposed to be amended by a bill introduced by Senator Cummins of Iowa. This bill would specifically require that to qualify in the practice of medicine the applicant must have studied medicine and surgery "in a medical college authorized by law to confer such degree, or under a preceptor authorized to practice medicine and surgery for not less than three years if the diploma was issued prior to July 1, 1898." If the diploma were issued subsequent to June 30, 1898, the applicant must have similar qualifications covering a period of four years prior to the issuance of the diploma. The present law in the District of Columbia requires the applicant to have studied medicine for the three or four year period, but it does not specifically require that such study be in an authorized medical college.

Venereal Disease Law.—A bill introduced by Congressman Raker of California would require that every person in the District of Columbia having syphilis, gonorrhea or chancroid, and who is not at the time under treatment of a physician, shall report the circumstance to the health officer of the District. The bill requires that physicians, nurses, dentists and other professional persons shall make similar report of all cases that come under their observation. No person suffering from syphilis, gonorrhea or other like disease shall work as a barber, dentist, cook, baker or handler of food. Many other restrictive provisions are in the bill. Congressman Raker has also introduced a bill for the free distribution of antirabic virus for the treatment of persons exposed to rabies; a bill to enforce the law regulating the sale of viruses, serums, toxins in the District of Columbia; and for the destruction of animals affected with rabies.

FLORIDA

Birth Registration Bill.—A measure introduced in the state legislature which would make the county judge recorder of births instead of official registrars, as at present, is being fought by the state health officer.

GEORGIA

Personal.—Dr. Buena V. Elmore, Blountstown, Fla., has been appointed health commissioner for Floyd County.

Medical Association Meeting.—The annual meeting of the state medical association will be held, May 4-6, at Rome.

Physician Convicted.—It is reported that Dr. Mack C. Wilson, Savannah, has been convicted of involuntary manslaughter and his punishment fixed at from one to two years in the penitentiary. Dr. Wilson was charged with performing a criminal operation upon Mrs. Maud Muller of Screven County, last August, who made a dying statement incriminating the defendant.

ILLINOIS

Hospital News.—The contract has been awarded for the construction of a $175,000 hospital at Duquoin.

Reelect Physician for Mayor.—Dr. George F. Johnson was reelected mayor of East Moline, April 19. His opponent was Dr. Earl A. Soule.

Physician Pleads Guilty.—It is reported that Dr. Edmond D. Converse, Chicago, indicted on thirty-two counts for violation of the Harrison Narcotic Law, has pleaded guilty.

Death from Trichinosis.—A death on March 18 from trichinosis was recently reported to the state department of public health. The victim was a white woman, aged 28, who lived at Macomb.

New Trial for Dr. Hobbs.—Dr. Lillian Hobbs Seymour, who was sentenced to fourteen years in the penitentiary on a conviction of performing an operation which caused the death of Elda Christopherson in 1916, and was sent to Joliet in May, 1920, it is reported has again been granted a retrial.

State Department of Health Starts Weekly Conferences.—On each Thursday morning the chiefs of the ten major divisions of the state department of public health are meeting for a conference with the director. The conference on the last Thursday of each month is given over to a review of current literature on public health.

Mosquito Surveys.—In response to a request from the Southern Illinois Medical Association, the state natural history survey has undertaken a number of surveys in representative communities to determine the location and prevalence of malaria-carrying mosquitoes in southern Illinois. Up to the present time such surveys have been completed at Murphysboro and Carbondale in Jackson County and at Herring in Williamson County. According to reports an attempt has been made to determine the number of mosquitoes relative to the number of malarial cases. The next survey will be carried out during the coming summer at Thebes in Alexander County. Reports ready for distribution may be had from the state natural history survey, Urbana.

Tuberculosis Sanatorium for Champaign County.—On April 19, the board of supervisors of Champaign County unanimously voted to increase an appropriation of $85,000 for the construction of a county tuberculosis sanatorium to $109,000. This increase makes possible the erection of buildings that represent the latest and most scientific thought in sanatorium construction and that will be commodius enough to provide for as many patients as are likely ever to be in the sanatorium at one time. The architectural plans for the entire institution have already been approved by the state department of public health and contract bids have been received by the local committee in charge. Everything is now ready for the actual work to begin. The sanatorium will be located just north of Urbana.

Health Promotion Week.—In spite of inclement weather conditions, Health Promotion Week (April 17-23) was a success. Especially noteworthy was the widespread and active interest displayed by the smaller municipalities and rural communities. The leading features of the week's program were general clean-ups, better baby conferences and birth registration. Preliminary to Health Promotion Week, the state department of public health, under the direction of Dr. Isaac D. Rawlings, and in keeping with the proclamation issued by Governor Small, outlined a program for the activities of each day of the week, printed and distributed 25,000 copies of a special bulletin on the subject and sent out 10,000 letters in reference thereto. The response to this publicity campaign taxed the department to the limit in its effort to meet requests from local communities for advice, special literature, exhibit material and assistance in the way of speakers. Schedules were so arranged that the motion picture films, stereopticon slides and posters maintained in the loan service made showings each day. Twenty speeches and special demonstrations were made by the limited personnel of the department. More than 80,000 pieces of literature and more than 400 letters were sent out in reply to special requests.

INDIANA

Hospital News.—The new Allen County infirmary to be constructed this year will cost approximately $750,000.——Bids have been received for the new Decatur Memorial Hospital at Greensburg.——The senate passed the Southworth bill appropriating $225,000 for the new hospital and kitchen at the Indiana Soldier's Home at Lafayette.

KENTUCKY

Hospital News.—The Mary Chiles Memorial Hospital, Mount Sterling, was dedicated, April 16. It has eleven rooms for patients, also operating and maternity rooms, all furnished by societies, churches and individuals.

Mental Hygiene Society.—After an address by Dr. Frankwood E. Williams, New York, medical director of the National Committee for Mental Hygiene, at Louisville, plans were made for the organization of a state society which will seek to make Louisville an educational center and establish clinics throughout the state.

LOUISIANA

New Medical Society.—At a meeting called by Dr. Frank T. Gouaux, councilor Third Congressional District, Louisiana State Medical Society, April 12, at St. Martinsville, there was organized the St. Martin Parish Medical Society, and the following officers were elected: Dr. Dominique J. Gragnon, Breaux Bridge, president; Dr. John L. Beyt, St. Martinsville, vice president, and Dr. Patrick H. Fleming, St. Martinsville, secretary-treasurer.

MARYLAND

Hospital for Criminal Insane to Be Erected.—Approval has been granted by the Board of Public Works of Maryland to the plans of the state lunacy commission for the proposed hospital building for the criminal insane to be erected on the grounds of the Spring Grove State Hospital at Catonsville. Contracts will be let and construction begun immediately. The work is expected to be finished before the end of June. The building will house 107 patients in addition to an adequate staff of doctors and nurses.

Meetings.—At the School of Hygiene and Public Health, Johns Hopkins University, on April 25, Dr. William H. Davis gave a lecture on "Birth Registration in the United States." ——At the annual meeting of the West Baltimore Medical Association, held April 19, the following officers were elected: Dr. Arthur Barrett, president; Dr. William J. Sullivan and Dr. F. L. G. Helm, vice presidents; Dr. Joseph Zeirler, treasurer, and Dr. Gustav Goldman, secretary.

Medical Staff at Johns Hopkins Medical School Resigns.—An unusual situation has been brought about in the Johns Hopkins Medical School and the Johns Hopkins Hospital by the resignation of Dr. William S. Thayer, as professor of medicine in the Medical School and physician-in-chief of the hospital. The resignations of the seventy physicians connected with the department of clinical medicine have been offered in response to a circular letter sent out some days ago by the medical board of the hospital. This letter explained that none of the members of the department would be reappointed prior to the selection and assumption of his duties of the successor to Dr. Thayer. It was further explained that this course was being taken that the new professor of medicine and physician-in-chief of the hospital might have a free hand in reorganizing his department and carrying out the policies involved in the full-time professorship idea and making it to the greatest extent successful. This action was taken by the medical board, which is composed of the heads of the various departments of the hospital, on the recommendation of the advisory board. The whole matter is considered a form and at least 90 per cent. of those connected with the department will be reappointed.

MASSACHUSETTS

Appeal of Unions to Health Department.—Claiming that it is against the law to house men in buildings not designed for dwelling purposes the Allied Printing Trades Council has sought an order from the Boston City health department forbidding the Southgate Press to house strike breaking printers in its plant.

MICHIGAN

New General Hospital for Detroit.—Seventy-one per cent. of the voters registered their approval of a $3,000,000 bond issue for a municipal general hospital of 1,000 beds for Detroit at the April 4 election. The Wayne County Medical Society has passed resolutions indorsing the hospital.

MISSISSIPPI

Supervision of Midwives.—Rules and regulations have been passed by the executive committee of the state board of health with a view to controlling midwifery in Mississippi. Chief Nurse Laurie Jean Reid has been detailed to the state by Surgeon-General Cumming for special work under the direction of the Bureau of Child Welfare. Plans are being made to organize all of the midwives in all of the counties in the state and fix a standard for those midwives who begin this work in the future and also to instruct those who have been practising midwifery so as to raise the standard. A meeting will be held for three days in each county for the midwives, by the state supervisor of midwives, and a course of instruction will be conducted and also investigation made relative to their fitness for such practice. A bulletin is being printed giving the equipment and requirements for the practice of midwifery in Mississippi.

MONTANA

Personal.—At a recent election of officers for the state board of health, Dr. Louis H. Fligman, Helena, was chosen president.

NEW YORK

Woman's Medical Society.—The fifteenth annual meeting of the Women's Medical Society of New York state will be held at the Kings County Medical Building, Brooklyn, May 2, under the presidency of Dr. Lois L. E. Gannett, Adams.

Course in Study of Syphilis.—The Department of Hospitals and Dispensaries, Buffalo, in cooperation with the Department of Medicine, University of Buffalo, and the Department of Health of the City of Buffalo, gave an intensive clinical and laboratory course in the early diagnosis, treatment, prevention and control of syphilis for the physicians of Erie County, March 14-19. At its completion the physicians presented a unanimous request for its repetition another year.

New York City

Physician Acquitted.—Dr. William B. Wilkinson of New Brighton, Staten Island, has been acquitted in the Supreme Court of the charge of manslaughter. He was accused of having performed an illegal operation, but at the trial it was shown that the operation was necessary to save the woman's life.

Board of Health Regulates Private Hospitals.—At a recent meeting of the Board of Health a resolution was adopted amending Section 220 of the Sanitary Code so that it reads as follows:

> No person, persons or corporation, other than those specially authorized by law, shall conduct or maintain any public or private hospital or institution where human beings may be treated or cared for by a physician or midwife, and no person, persons, or corporation, other than those specifically authorized by law, shall conduct a lying-in hospital, home or place for the care of pregnant women or advertise, offer, or undertake to receive or care for them at such place, or at his or her home, without a permit therefor issued by the board of health or otherwise than in accordance with the terms of said permit and with the regulations of said board.

Antidiphtheria Campaign.—To meet the demand by practicing physicians for material for the Schick test and the Schick-test-control, as well as for toxin-antitoxin, New York City has established a number of consignment stations. These stations have been so selected that each will be easily accessible from the surrounding area. For the present physicians can obtain these products at these stations without charge for use on residents of New York City. New Schick-test and Schick-test-control outfits are being prepared, and as soon as these are ready a price of 25 cents will be charged for each. At the same time toxin-antitoxin will also be supplied in 3.5 vials, sufficient for the immunization of one person, for 25 cents. The health department, however, is ready to make these tests. The work is being done at baby health stations and department clinics. An antidiphtheria campaign has been started in the Bronx by Dr. Arthur J. O'Leary, Bronx health officer, with the special object of persuading parents to have their children undergo the Schick test.

NORTH CAROLINA

Hospital News.—A hospital for the use and benefit of orphans at the Masonic Home will be built at Oxford, at a cost of $100,000.——Plans have been completed for the proposed new fire-proof wing of the Mission Hospital at Asheville.——A drive is being made for funds to take over a large residence in Asheville, on which an option has already been secured, and remodel it as a hospital for negroes. The plans call for an expenditure of $10,000.——The plans have been approved and work will soon be started in the construction of a new hospital at Rocky Mount to replace the Atlantic Coast Line Hospital destroyed by fire, March 2.

OHIO

Medical Classes Merely Suspended.—Instead of the freshman and sophomore classes in the State University College of Medicine being "discontinued indefinitely," as stated in The Journal, April 16, we learn that these classes were temporarily suspended for only three days.

OKLAHOMA

Hospital News.—The Muskogee County proposition for a $100,000 tuberculosis hospital was carried by a large majority.

PENNSYLVANIA

Philadelphia

Personal.—Prof. Elmer V. McCollum, Johns Hopkins' addressed members of the Academy of Stomatology at the College of Physicians, April 27. His subject was "Vitamins and Diet, and the Influence upon the Teeth and Investing Tissues."

Neurological Society Meeting.—At a meeting of the Neurological Society, held at the College of Physicians, April 22, "Analysis of Motor Disturbances by Means of the Ultra-Rapid Moving Pictures and the Kymograph" was discussed by Dr. Frederick Tilney, professor of neurology, and Dr. S. Philip Goodhart, associate professor of neurology, Columbia University, New York.

Pharmacy College on the Parkway.—Announcement was made, April 21, by officials of the Philadelphia College of Pharmacy that the new college building costing several million dollars would probably be erected on the Parkway near Twenty-First and Callowhill streets. It was also stated that Rear Admiral William C. Braisted, retired, former surgeon-general of the Navy, will formally accept the post as president of the college next Thursday, when he will attend a meeting of the board of trustees. It is expected that Admiral Braisted will assume his new duties at the college early in May.

Honor Conferred on Dr. La Place.—Dr. Ernest La Place, president of the French colony in this city, has been decorated as an officer in the French Legion of Honor by Réné Viviani, special envoy of France. The ceremony took place, April 19, at the Hotel Vanderbilt, New York, where Dr. La Place was summoned by former Premier Viviani. Before an assemblage of French officials and Americans Dr. La Place received the badge and the accolade in the name of the French government. In 1902 the "Palmes académiques" were conferred upon Dr. La Place by the French government in recognition of his valuable scientific and medical researches. Later, in 1906, he was made a chevalier in the Legion of Honor.

State Quarantines Dogs.—The department of agriculture today established a quarantine for dogs because of the rabies in the entire county of Delaware, the townships of Kennett, Pennsbury, Birmingham, Thornbury, Westtown, Willistown, Easttown and Tredyffrin, in Chester County, and the townships of Upper Merion and Lower Merion, in Montgomery County, including all municipalities in them. The quarantine will extend for seventy-five days, dating from April 1. All dogs must be securely confined on the premises of the owner at the times, except when being led under proper restraint and except when muzzled. Any dog found running at large may be killed and the owner will be liable to prosecution.

RHODE ISLAND

Consolidation of Public Health Nursing.—Under the auspices of the Smithfield Public Health League the nursing service now being carried on by industrial plants of the town will be consolidated and the town will be divided into three districts, one covering Esmond and Georgiaville in which the nurse will work in the Esmond Mills and the Bernon Mill. The second district will take in the Greenville Mills and the third the Centredale Worsted Mill at Stillwater. This plan may eventually be used all over the state.

TENNESSEE

New Officers for State Society.—The eighty-eighth annual meeting of the state medical association was held at Nashville, April 12-14, under the presidency of Dr. Leon L. Sheddan, Knoxville. The following officers were elected for the ensuing year: Dr. William Britt Burns, Memphis, president; Drs. Alexander B. Dancy, Jackson, Leonard W. Edwards, Nashville, and George P. Zirkle, Kingston, vice presidents for west, middle and east Tennessee, respectively; Dr. Olin West, Nashville, secretary (reelected), and Dr. Joseph F. H. Gallagher, Nashville, treasurer.

GENERAL

Child Labor Conference.—The National Conference on child labor will be held in connection with the conference on social work, June 22-29, at Milwaukee, Wis.

President Favors Hospital Day.—President Harding has endorsed the plans of the United States Public Health Service for the celebration of a National Hospital Day on May 12.

Association of Anesthetists.—The annual meeting of the Interstate Association of Anesthetists will be held, June 1-2, at Niagara Falls, in conjunction with the Canadian Society of Anesthetists and the Ontario Medical Association.

Sheppard Bill Again Introduced.—The bill for the protection of maternity and infancy which passed the Senate last session but failed in the House, has been again presented by Senator Sheppard of Texas. In his message to Congress, President Harding made specific request that this legislation be passed at the present session. The bill is known as Senate No. 1039.

Inter-Allied Meeting of Neurology Society.—The ambassador of the French Republic has called the attention of the Government of the United States to the second Inter-Allied meeting organized by the Neurology Society to be held at Paris, France, June 3 and 4. The French Government desires to have the medical profession of the United States represented at this conference.

British Educators Study American Medical Institutions.—Under the auspices of the Rockefeller Foundation Major-Gen. Sir Wilmot Herringham, physician in ordinary to his Majesty the King of England, chairman of the Committee on Medical Education of the British University Grants Committee, consulting physician to St. Bartholomew's Hospital, consulting physician to the Forces in France, vice chancellor of the University of London, and Sir Walter Fletcher, secretary of the British Medical Research Council, senior demonstrator in physiology, Cambridge University, Croonian lecturer, Royal Society, are traveling over the United States making a tour of study and inspection of various medical and scientific institutions for the British government. Later they will return to Canada. They were entertained in Washington, D. C., by Major-General Ireland, visiting the Surgeon-General's Library and various army and navy institutions. They also visited the Mayo Clinic, Rochester, Minn., and were entertained by the Institute of Medicine of Chicago during this week.

LATIN AMERICA

New Mexican Journal.—The Medical Society of Vera Cruz has begun to publish a journal entitled *Revista Médica Veracruzana.* Dr. S. Morfin is the editor and Dr. R. Ojeda Falcon, the manager.

Election of Officers.—The Círculo Médico of Rosario, Argentina, has elected for the coming year Dr. E. F. Solari, president; Dr. A. Baraldi, vice president; Dr. R. Siquot and Dr. M. Steinsleger, secretaries; Dr. C. Cherubini, treasurer, and Dr. T. Fracassi, editor of the *Revista Médica,* the organ of the society, assisted by Dr. E. A. Carrasco.

Practice of Medicine in Colombia.—A new law, regulating the practice of medicine, has just been enacted in Colombia. Dr. F. Porras was its author and his purpose is to restrict licenses to reputable physicians. Up to the present, politics has had a great deal to do with licensing of physicians in Colombia, this power being entrusted to the different governors.

Personal.—Dr. B. Mejía of Medellín, Colombia, has tendered his resignation as director of the medical school of that city.——Dr. M. V. Peña of Bogotá, Colombia, has returned to his country after a trip to Europe and the United States.——Dr. J. Francos Rodríguez, a prominent politician and former cabinet member, has just returned to Spain from Chile where he was sent by the Spanish government on a diplomatic mission.——Dr. Angel H. Roffo has returned to Buenos Aires after nearly a year in Europe. His extensive experimental work on cancer has attracted much attention, and he has returned to resume his work as assistant professor of pathologic anatomy. He is also on the editorial staff of the *Prensa Médica Argentina.*

Tribute to Dr. Guiteras.—The meeting of the Academia de Ciencias of Cuba, March 26, at Havana was a special session in honor of the safe return of Dr. Juan Guiteras from his mission to Africa on behalf of the Rockefeller Foundation. It will be remembered that General Gorgas started with him but was stricken in London. Dr. Guiteras' work as expert on

yellow fever and other tropical diseases and his initiative as chief of the National Board of Public Health since the American occupation of Cuba were emphasized in the addresses presented. In the nineties he was professor of pathology at the University of Pennsylvania and assumed a similar post at Havana in 1900, has represented the government of Cuba in international gatherings since then, and was the invited guest of the American Medical Association at the Atlantic City meeting in 1919. He has asked to be relieved of his public duties as he is now 69.

FOREIGN

Memorial to Paris Interns Victims of the World War.—The monument in memory of the interns of the Paris hospitals killed in the war was unveiled, April 24, at the Hotel-Dieu Hospital at Paris.

New Portuguese Journal.—There has just begun the publication of a new pediatric bimonthly in Portugal entitled *Arquivos de Pediatria e Orthopedia.* Its editor is Professor Salazar de Sousa.

Scarcity of Nurses at Vienna.—The *Wiener klinische Wochenschrift* states that the force of nurses at the large general hospital at Vienna is seventy less than the regular number, and certain wards have had to be closed.

Deaf and Dumb in Portugal.—According to a recent article in the *Medicina Contemporanea,* the number of the deaf and dumb in Portugal exceeds that of most European countries, being about 75 per hundred thousand people. There are in Portugal only two institutions for deaf mutes.

Interchange of Professors.—It is announced that the following Netherlands professors have been invited to deliver lectures in London, Einthoven, the physiologist; Salomonson, the neuropathologist; Bolk, the anatomist; Boeke, the embryologist, and Hamburger, the physiologist.

Antituberculosis Institutions in France.—According to the report presented at the International Conference on Tuberculosis held in 1920, on that date there were in France in operation 213 tuberculosis dispensaries and there are being organized 154 more. There were only sixty-nine sanatoriums with 7,075 beds.

Spanish-Portuguese Congress.—At the Spanish-Portuguese Scientific Congress, to be held at Porto in June, one of the sections of the congress will be devoted to medical sciences. Dr. M. Lemos is its president and Dr. J. Pires de Lima, first secretary. An exhibition will be held in connection with the congress. All papers should be sent to the president of the section. The enrolment fee is 10,000 reis.

Traveling Fellowships for Paris Teaching Force.—The *Paris médical* states that the University of Paris has been presented with funds by M. D. Weill to provide for five fellowships in foreign universities, each of 6,000 francs. These fellowships are to be given to graduate physicians or pharmacists intending to take up teaching, or to associate professors in the different branches of higher instruction. The awards are to be made after May 15.

Visit of French Physicians to Poland.—The Académie de Médecine at Paris has received a letter from the dean of the medical faculty of the University of Warsaw inviting a party of French physicians to visit Poland in September for two weeks. It is proposed to hold a French-Polish conference for three days, with excursions, etc. Warsaw physicians offer lodgings to the party, including their ladies. The dean is president of the Société Médicale Franco-Polonaise and the invitation is signed also by the president of the Société d'Hygiène.

The Opium Law in Germany.—The German government has fallen into line with the United States, Belgium, France, England, Holland and Japan in restricting the sale of narcotics to prescriptions for therapeutic purposes. It is provided that if the prescription is not for therapeutic purposes the druggist is not to dispense the drug. No restrictions are placed on use for scientific purposes by reliable persons, but the import and export and traffic are strictly regulated, and the public health service has extensive supervision and rights of inspection. The *Medizinische Klinik* adds that if physicians, dentists and veterinarians do their duty, that is, prescribe only according to scientific principles, the success of the law is assured.

A Collective Inquiry on Syphilis.—The *Vie médicale* heralds as a small revolution the collective inquiry that has been inaugurated by the Comité de Propagande d'Hygiène Sociale calling upon all the practitioners of France for data in regard to the connection between syphilis and tuberculosis and between syphilis and cancer. It is the first time, the editorial states, that the entire medical profession, without distinction of titles or function or academic connection, has been invited to collaborate in a collective inquiry undertaken by an official body. The Comité is organizing an *office de documentation,* seeking to ascertain the exact morbid value of syphilis and its share in the death rate and birth rate, alone, and in connection with tuberculosis and cancer. Hitherto such inquiries have been restricted to specialists, but their views are naturally too one-sided. "In social hygiene," the editorial concludes, "no progress, either theoretical or practical, can be hoped for without the aid of the entire profession." (See also Paris letter, p. 1182.)

Child Welfare Work in Poland.—A communication to *Gynécologie et obstétrique* describes the inauguration of the puericulture school at Warsaw to train women to take charge of different institutions for child welfare work, especially in remote regions. A six months' course is given, and includes practical training in management of children's hospitals, day nurseries, dispensaries, milk stations, etc. The course of training includes not only the hygiene of childhood and schools and house inspection but also professional and general hygiene, education of children, protection for children and mothers, first aid and antituberculosis work and measures to prevent the spread of alcoholism and venereal diseases, the training of backward children, juvenile delinquents, and also training in laws relating to the protection of childhood, and in administration and bookkeeping enough for the purpose. The instruction is free and students from out of town are given free lodging and food tickets at reduced rates. The Warsaw students have ten free scholarships. The school is in the building founded by Baron de Lenval for child hygiene, and is in direct charge of Dr. Strackiewicz, chief of the child welfare service in the public health ministry. Sixty students are already enrolled.

Advertising of "Rad-Jo" in Germany.—Our German exchanges protest that the advertising of "Rad-Jo," which claims to render childbirth harmless is growing more and more "grotesque." The latest device is to send a question-blank to ministers asking them to place the advertising matter of the remedy in the hands of the young women's societies of their church, adding that for the address of every prospective mother sent in the firm will pay 50 pfennigs into the church treasury. A large engraving is presented at the same time, portraying a country festival scene, with the placard, "Presented to the Society in token of gratitude for aid to prospective mothers," signed by the proprietor of "Rad-Jo," Wasmuth, Hamburg. "Still more dangerous" the *Münchener medizinische Wochenschrift* continues (April 1, 1921, p. 413), "is a circular that has reached us in which physicians are held responsible for the death of a mother and child at delivery because they advised against the use of Rad Jo. The circular is entitled, 'Sad Consequences of Births Without Rad Jo,' and it states specifically 'The physicians have the death of mother and child on their conscience because they advised against the use of Rad Jo.' In this the Rad Jo manufacturer certainly goes beyond the farthest limits of what the law allows. Unfortunately it is not possible to prevent him from misleading and deceiving suffering humanity by his unbridled exaggerations. But the medical profession does not have to submit quietly when physicians are accused of allowing deaths to occur from their neglect to apply his proprietary. We believe that the organized medical profession should take steps at once to prevent the further dissemination of this advertising as a menace to the public health."

Some years ago THE JOURNAL (Aug. 31 and Nov. 9, 1912) reported the case of the suit that Professor Kouwer of Utrecht brought against the exploiters of "Rad-Jo" for claiming that the favorable course of a case of childbirth in the queen of Holland was due to the use of this nostrum. As obstetrician to the queen, Professor Kouwer sued the "Rad-Jo" concern. He won his suit and a fine was imposed. Later the "Rad-Jo" quacks republished the same statements and Kouwer again brought suit and was again awarded damages. "Rad-Jo" has been exploited in the United States, especially among the German-Americans. It was sold by a concern known variously as the "Institute of Reform" and also "Institute of Regeneration" located in Chicago. These same quacks also sold "Stroopal," also of German origin, a fake cure for cancer.

Deaths in Other Countries

Dr. **A. F. Piñero,** assistant professor of pediatrics and director of the insane asylum for women at Buenos Aires. ——Dr. **L. Launay** of the medical school at Angers.——Dr. **J. Belin,** physician to the Charité at Paris.——Dr. **A. Niemann,** professor of pediatrics at Berlin, aged 41.

Government Services

Health Work Ordered Merged

Secretary Mellon of the Department of the Treasury has ordered the centralization of all work, officers and personnel of the United States Public Health Service connected with the medical treatment of disabled war veterans with the exception of hospitals and dispensaries under the Bureau of War Risk Insurance. The reorganization will be put in effect at once. The change means that all field offices of the public health service engaged in the work of examining and finding suitable hospital beds for service men will be taken over by the Bureau of War Risk Insurance. All the contracts with private institutions for the treatment of such men will be taken over by the bureau also. The bureau proposes to establish an adequate force of medical inspectors to insure proper and effective treatment of patients of the bureau in whatever institutions they may be placed.

Changes in Navy Medical Department

Capt. Frank E. McCullough, M. C., U. S. Navy, recently on duty at the Naval Hospital, New York, has reported for duty at the bureau of medicine and surgery as inspector of the medical department activities on the East coast, the Central states and the West Indies, relieving Rear Admiral Robert M. Kennedy, M. C., U. S. Navy, who becomes a member of the Naval Examining Board, of the board of medical examiners and of the retiring board in place of Capt. George Pickerell. Captain McCullough is the personal representative of the Surgeon-General in making inspection of hospital activities, investigating complaints and examining into facilities offered for the care of war risk patients and other kindred problems.——Lieut.-Com. Joseph R. Phelps, M. C., U. S. Navy, has been relieved by Lieut.-Com. Robert F. Jones, M. C., U. S. Navy, from duty as chief of the division of preventive medicine and ordered to the U. S. S. *Oklahoma*.

Hospitalization Committee at Work

The Hospitalization Committee appointed by Secretary Mellon of the Treasury Department to decide on the location of sites for new hospitals and the enlargement of other government hospitals, expending $18,500,000 appropriated by Congress for the purpose, will make a confidential report on the result of its investigation some time in May. The committee, consisting of Drs. William C. White, Pittsburgh, Frank Billings, Chicago, Pearce Bailey, New York, and Chancellor J. G. Bowman, is now occupying quarters in the Bureau of War Risk Insurance building, and is engaged in statistical study of hospital facilities in the various parts of the country with a view of relieving the pressure in certain sections where hospitals are overcrowded with patients. All hospitals used for former service men are being classified and charted. After making recommendations on the government hospitals that should be enlarged the committee will take up the question of choosing the sites for the erection of new hospitals to be built, provision for which is covered in the congressional appropriation.

Submits Public Welfare Plan

Brig.-Gen. Charles E. Sawyer, President Harding's personal physician, has laid before the Senate Committee on Education and Labor a detailed plan for the creation of a new executive department of the government with a cabinet officer at its head. The proposed name is the Department of Public Welfare. The plan provides for an executive department with four main divisions covering education, public health, social service and veterans' service administration. It contemplates placing all the existing agencies in the government dealing with these matters in the public welfare department under the public health division, which would be in charge of an assistant secretary. General Sawyer declared that the arrangements were to coordinate research work, quarantine and sanitation and hospitalization. He insisted that there was no reason why the United States should not have the strongest public health service in the world since it has the greatest surgeons, investigators, and laboratories to make it possible. He pointed out that there was no practical reason for having existing public health service under the Treasury Department.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 28, 1921.

Anglo-French Cooperation in Teaching

The Faculty of Medicine of Paris formed a few months ago the Association pour le développement des relations médicales for the purpose of bringing the French and English medical professions into closer union. The faculty founded a bureau for supplying English physicians with all the information they require for medical study in Paris. Following the examples of Berlin and Vienna, it arranged that English-speaking professors of the faculty should lecture in English. The formation of a branch of the London Fellowship of Medicine in Paris was next projected. It was felt that this would do much to cement the union between the professions of the two countries. Under this arrangement, when a member of the fellowship goes to Paris it will only be necessary for him to present his card of membership to the secretary at the bureau of the association, and free entrance will be given to him for all the clinics of Paris. A reciprocal arrangement for French visitors to London would be made. Dr. Monod, a member of the French faculty who is well known in this country, where he has taken the membership of the College of Physicians, has visited London as a delegate from the Paris faculty and lectured at the house of the Royal Society of Medicine on the project. He was a friend of Osler, who warmly favored it. He received a cordial reception, and the project is receiving favorable consideration.

"Irresistible Impulse" as a Defense Against the Charge of Murder

The case came before the court of criminal appeal of a man convicted of the murder of a woman with whom he had been living in adultery. The murder was committed in circumstances which showed deliberation and premeditation long before, and was followed by expressions of satisfaction that he had killed the woman and regret that he had not killed her mother at the same time. The defense was that the crime was committed in a moment of impulsive insanity and was the result of irresistible impulse. The grounds of appeal were that the verdict was against the weight of evidence and that the judge had not put before the jury fully the medical evidence. The physicians hypnotized the prisoner, and one of their points was that he said the same thing in the subconscious state as in the fully conscious one. In the appeal court the lawyer for the defense said that the subconscious mind sometimes rose up like a tide and overwhelmed the peaks of the conscious mind. The president (Mr. Justice Darling) interjected a reference to the Thaw case. He said that there was a notorious case in America in which, when a rich man was in danger of the electric chair, the theory was advanced that the subconscious mind was on top; but as soon as he escaped that danger the theory was advanced that the conscious mind had come up again and that he ought to be released. Another of the appeal court judges (Mr. Justice Avory) remarked that the hypnotic experiment showed that the conscious and the subconscious mind were the same thing. There was no evidence that the latter assumed mastery over the former. In delivering judgment the president said that a great deal of evidence was called of physicians who contended that the man was insane on grounds that had never been admitted in any English court as sufficient. Theories were started and hypnotism resorted to, but quite uselessly, because when hypnotized the man said the same thing as in his ordinary state. From their own theories of the action of the mind, of the mind's

being subdivided, and from their own talks with the man—for that was all it came to—the physicians professed that when he killed the woman it was his subconscious mind that was acting, and that when he said afterward that he was gratified it was his subconscious mind that was acting. These opinions founded on nothing but a theory which appeared incapable of proof bewildered him. Possibly if the fact existed it could be more clearly expounded. The physicians would have the law of England not discriminate between cases of premeditation, deliberation and the gratification of revenge and other cases in which homicide was committed on the spur of the moment. But the law had long laid down that these matters ought to be taken into account in determining whether homicide was murder or manslaughter. The appeal was dismissed.

"The Age of Consent"

The bill raising from 16 to 17 years the age at which "consent" on the part of a girl is a defense for indecent assault, and removing the defense that the accused had "reasonable cause to believe" that a girl was 17 years of age, has been read a second time in the House of Lords. In the committee stage the Bishop of London, who introduced the bill, in view of the discussion on the second reading accepted an amendment which retained the age of 16 but provided that reasonable cause to believe that a girl was over 16 years of age should not constitute a defense. He believed that by getting rid of that defense there would be great gain of protection for young girls, and if the measure passed through the chamber as an agreed bill there would be greater possibility of its being accepted in the other chamber. This was agreed to.

PARIS

(From Our Regular Correspondent)

April 8, 1921.

Death of Dr. Adolphe Leray

Dr. Adolphe Leray, aged 55, died at Enghien-les-Bains, a victim of the roentgen ray. He was the founder of the roentgen-ray department of the hospital Saint-Antoine, and was its director for twenty-five years. During the war he was director of the radiographic service of the military hospital of Saint-Brieuc and of the Ecole des Infirmières de la Salpêtrière. His right thumb had been amputated; his right middle finger carried an ulcer, and the hands were affected with a dermatitis. In 1920, he was made a chevalier of the Legion of Honor, with military title, in recognition of his services during the war.

Death of Dr. Charles Monod

Dr. Charles Monod, who died, aged 77, was born in Paris, Sept. 26, 1843. He graduated in medicine in 1873. Two years later he was made professor agrégé in the Faculty of Medicine of Paris. He had been a member of the Academy of Medicine since 1893, and was its president in 1916. He was also president of the Society of Surgery. His publications are represented by his Treatise on Tumors of the Testicle, written in collaboration with Dr. Terillon, and by his Operative Surgery, in the preparation of which he was assisted by his pupil, Dr. Vanverts. This book was regarded as authoritative for many years.

Anaphylaxis and Immunity

Dr. Maurice Arthus, professor of physiology in the University of Lausanne, has published a most interesting book, entitled "Anaphylaxis and Immunity." In it are set forth the experimental results obtained by the author on anaphylaxis, the proteotoxies, anaphylaxis-immunity, the venoms and antivenom serums during the last twelve years. In the preface, Arthus discusses the general considerations of experimental methods which deserve notice. He enumerates, especially, the ideals that should animate the research worker. He should be possessed of the right spirit—simple, clear and precise, and those qualities which are well manifested by the choice of work and a knowledge of his limitations, in the pronouncement of hypotheses, that is to say, of the questions or problems studied, or in the conception of experiences. The origin of many scientific discoveries is an observation made by chance—an accident—which the experimenter has seized, dissected, interpreted and discussed, and from which he has wrested the secret it has concealed. It was such a chance observation that led Pasteur to the discovery of vaccines, Charles Richet to the discovery of anaphylaxis, and Arthus to the discovery of serum anaphylaxis and proteose-anaphylaxis. But chance, in biology at least, does not bestow its favors on every one; it exacts of its protégés a quality—scientific curiosity—that is to say, a disposition not to regard as true things as they appear, and to quote them without further investigation—not to give as an interpretation the first thing which offers itself, but to examine with sustained attention, repeat the examination, and continue thus for a sufficiently long period of time to be able to detect the constants as well as the variables; investigate, analyze, measure, control, criticize, interpret, and, in order to justify his interpretation, have an experience which will be proved well founded or futile.

MADRID

(From Our Regular Correspondent)

March 25, 1921.

Authorities Dissolve Another Sanitary Syndicate

The governor of Oviedo, acting on a complaint presented by the pharmacists of that province, has ordered the dissolution of the Sanitary Union of Gijón. The pharmacists told the governor that they were compelled to become members of this union and to sign in advance an I. O. U. of 500 pesetas to guarantee the payment of any fines that might be charged against them, and another for 100 pesetas for emergency expenses. The governor declared the society illegal. This pharmaceutic union so far has served only to increase the price of drugs, compelling physicians to raise their fees and boycotting those who refused to comply.

Peculiar "Reporting" by the Physicians of Zamora

An instance of the rebellious spirit that seems to prevail among Spanish physicians is the peculiar conflict created by the Medical Association of Zamora. It is well known that medical societies want municipal physicians to receive their salaries directly from the central government instead of the municipal authorities, as these are irregular in their payments. The national government is trying to secure laws guaranteeing the payment of physicians' salaries, and the rulings lately issued by the secretary of the interior show the good faith of the government. But medical associations, in view of past disappointments, are not taking anything for granted. The Medical Association of Zamora, acting of its own accord, decided therefore to submit another protest to the government and, in order to compel acquiescence with its demands, adopted a resolution, which was published in its bulletin, to the effect that thereafter only one disease, nephritis, would be mentioned in death certificates. This resolution, although published in a bulletin which very few people read, was entirely overlooked until the Geographic and Statistical Institute called the attention of the general inspector of health to the peculiar conditions prevailing at Zamora —where, since September, all deaths were due to nephritis. This played havoc with the general statistics of Spain, a country which, according to international agreements, is obliged to add its own statistics to the statistics of other

European countries. Besides, a physician who thus certifies that a person has died from a disease when he actually knows the death is due to another cause is guilty of counterfeiting an official document. The inspector of public health so informed the governor of Zamora, asking him to enforce the laws on this subject. The physicians who are not participating in this revolutionary movement are amazed at the resolution adopted by the Medical Association of Zamora and also at their peculiar view of medical duties. It really means that in many occasions when the deceased had infectious diseases, the precautions specified in the law were not observed at all.

Imprisonment of Officers of Pharmaceutical Syndicate of Barcelona

Barcelona has been for the last few months a victim of syndicalist agitation. The revolutionary syndicate of workers has already killed more than 100 employers. In view of the absolute failure of the government to repress the outrages, the syndicalists became bolder and committed their crimes in sight of everybody in the highways. The military governor of Catalonia, because of the absence of the civil governor, assumed command over the city, and began to enforce without fear or favor the law both as regards employers and employees. The assassins' impunity came immediately to an end, and likewise that of profiteers. The majority of Barcelona pharmacists had formed a syndicate entirely unconnected with the Pharmaceutical College, which is the official association provided by law, and, imitating the methods employed by workers' syndicates, began to apply coercive methods in a way quite outside the law. Each of the members had to sign a blank check so that in case he did not obey the syndicate's orders he could be compelled to pay any fine the officers might impose, no matter how large. It seems that the syndicate specialized in maintaining the high price of pharmaceutical products and also in boycotting any druggists who refused to become members. Some of the druggists realized that an illegal association of this sort could not assume duties already entrusted legally to other agencies, and reported the fact to the governor. This official acted toward the pharmacists in the same way he had acted toward fishermen and bread sellers. So one day Barcelona saw the officers of the pharmacists' syndicate crossing the Ramblas on their way to jail. Although they are well known men and some of them influential millionaires, they were imprisoned and indicted for violation of the law. Each of them was compelled to give a bond of 10,000 pesetas to recover his freedom, pending trial.

BELGIUM

(From Our Regular Correspondent)

April 2, 1921.

The Dental Crisis

We are awaiting impatiently the royal or ministerial decree which shall modify the conditions under which dental diplomas may be secured and which shall establish a nation-wide course in modern dentistry and lead to the creation of thoroughly equipped dental schools. From this standpoint, it must be confessed that Belgium is the most backward country in the world; for, at the present time, courses in dentistry can scarcely be said to exist at all. In order to become a dentist the sole requirements are that the applicant shall be a "candidate in medicine" (an upper classman) and shall pass, before a board appointed by the provincial medical commission, a special examination, which is more or less superficial. On the other hand, we are suffering greatly from a dearth of dentists. For a population of 7,000,000 there are 600 dentists. Seven million inhabitants represent at least six million persons who are in need of regular dental attention, which would require every practicing dentist to care for 10,000 patients. To be sure, courses in dentistry are given in the medical schools of Ghent, Liége and Louvain, and there are two private dental schools in Brussels; but in the absence of an official program, of encouragment from high quarters, and in view of the uncertainty that exists in regard to the future status of the profession, the attendance at these courses is not commensurate with the needs of the public, and the schools themselves are at a loss to know what line of conduct they should advise their pupils to take. Because of this situation, the dental mechanics of Belgium have thought that the occasion offered them a good opportunity to claim the legal right to practice dentistry and to give to patients the care they need. The true solution of the dental crisis lies in the prompt establishment of a thorough course of dental study; the creation of complete dental faculties in our four universities; the encouragement of existing schools, requiring, however, that they take the official program as their minimal standard, and, in order to assure to the great masses of population the benefits of dental care, the spread in the schools of a knowledge of the elementary principles and habits required by modern dental hygiene. Furthermore, dental clinics and free dental dispensaries for pupils and the general public should be created, where not only urgent extractions may be performed but where also all forms of dental work may be done that may be required to preserve for the consultants a healthy condition of the mouth.

Action of Various Salts in Bread Making

Monsieur L. Michiels has taken up in collaboration with Monsieur R. Hennes the study of the effects of various salts on the amount of soluble constituents yielded by the various kinds of flour. The principal purpose of the inquiry is to explain the behavior of maize flour under the action of diverse salts. The authors have tried about fifteen different salts and have plotted curves showing their influence on the amount of soluble constituents yielded by various flours. A reading of this study brings out the essentially different behavior of wheat flour and maize flour under the same conditions. Certain salts, alum principally, and, to a less extent, sulphates of copper and zinc, employed in certain proportions, increase notably the amount of soluble constituents yielded by wheat flours. This fact furnishes an explanation of the better quality of bread made from flours treated in this manner. The yeast obtains, through the increase in soluble constituents, more abundant nutrition, owing to which it develops and reacts more vigorously. However, these salts act quite differently on maize flour. They decrease the yield of soluble constituents to a considerable extent.

The Pathogenesis of Arteriosclerosis

Monsieur de Waele has presented to the Academy of Medicine an article in which he gives an analytic survey of the history and the histology of arteriosclerosis; also an account of the observations that his study has brought forth. There is perhaps no problem that has been so much discussed and been the cause of so much controversy as this. From the histologic standpoint the author confines himself to a personal opinion. He believes in the tearing of the elastic tissue as the initial lesion. The academy did not show a willingness to accept this view. Van Duyse thinks that the tearing of the elastic tissue is a secondary phenomenon which follows other lesions. Temporary or persistent high blood pressure and tearing of the elastic tissue as the initial stage of the lesions do not suffice, however, in the opinion of the author to explain the pathogenesis of arteriosclerosis. Do the modifications in the blood precede the arteriosclerotic lesions? Or do the arteriosclerotic lesions contribute to the genesis of the blood changes? Or are the blood changes and the arteriosclerotic lesions concomitant and due to the same factors as the high blood pressure? De Waele merely points out these different phases of the problem.

PEKING, CHINA

(From a Special Correspondent)

March 15, 1921.

The Present Plague Situation in North China

After the epidemic of 1910-1911, when more than 60,000 deaths from plague occurred, the Chinese government appointed a commission of Chinese physicians to consider how best to prevent or to prepare for future outbreaks. This commission is known as the North Manchurian Plague Prevention Service, and has had its headquarters at Harbin in central Manchuria. It has been constantly on the watch for plague coming down from Siberia, where it is endemic. In the last decade only one outbreak of importance has occurred, that in Mongolia and Shansi three years ago, when 20,000 persons died.

Last October in the town of Hailar in upper Manchuria, about 100 miles southeast of the Siberian border, the dreaded plague again appeared. At once, Dr. Wu Lien Teh, graduate of Cambridge, England, and his associates of the Plague Prevention Service investigated the situation, and in a short time discovered twenty cases of bubonic and septicemic plague in the neighborhood of that town. Suddenly the character of the disease changed. No more bubonic cases appeared, but the pneumonic type developed and spread rapidly.

The town of Hailar, Manchuria, is on the section of the Trans-Siberian Railroad which is known as the Chinese Eastern Railway. The line runs northwest from Vladivostok across Manchuria through the city of Harbin and thence up into Siberia. From Harbin southward the railroad runs to Mukden, and from there on in three southerly directions to Korea, Port Arthur and Tientsin. The importance of this geography is evident. The terror produced by plague, with its swift death, makes its spread along railroad lines rapid. The impulse is to flee as far as possible and by the quickest route. During November and December, cases appeared all along the line from Manchouli, on the Siberian border, down to Harbin. Plague claimed many victims in the mines of western Manchuria, and then spread east of Harbin toward Vladivostok. To the end of February it had caused 2,127 deaths in Manchuria alone.

In the first week of February, the plague suddenly appeared in a small town in the southern part of Chihli Province, just north of the Shantung border and more than 600 miles south of Harbin. This town lies a little to the east of the main railroad line from Tientsin south to Nanking. The origin of this new outbreak was traced definitely to a Chinese who went north to Tientsin to buy his daughter's trousseau. It has not been determined whether he came in contact with the disease in Tientsin or on the train from Harbin; but the latter is considered more probable, as no cases have been reported in Tientsin. In any event, on the day after his return home, he developed pneumonic plague and infected all of the members of his family, who promptly died, and more than a hundred deaths occurred in fifteen neighboring villages.

Dr. Charles Young of the Peking Union Medical College was called for consultation in this area by Dr. F. F. Tucker of the American Red Cross Famine Relief Committee. Dr. Samuel Cochran came up from the medical school at Tsi Nan Fu in Shantung. Both of these physicians had extensive experience in the plague epidemics of 1910 and 1918, and they speedily confirmed Dr. Tucker's findings. Dr. Tucker had already notified the department of the interior at Peking, and two experienced health officials were dispatched to take charge of the situation in the affected region. The latest reports indicate that it is well in hand.

METHOD OF DEALING WITH THE SITUATION

The method of approach in a situation of this kind and in small country villages away from the railroad is essentially one of isolation. The department of the interior orders the provincial officials, and they in turn the district magistrates, to obey the health officers to the letter and to help them in every way. These, with the aid of the head man of the village and the local police, seek out the houses of infected persons and mark them with a sign. The houses are then guarded by the police, and no one except the health officials is allowed to either enter or leave them. Within the house the infected individual is isolated, and the rest of the household is moved as far as possible from the patient. Those who are well must all wear masks, which are provided by the health officers. If any of the household show symptoms of the disease, they must at once leave the well and go into the room of the sick person. The onset of symptoms always means death within from forty-eight to seventy-two hours. No treatment avails. Vaccines and serums have been found to have no value either in prophylaxis or in cure. The dead are buried in coffins or ditches, which are then filled with lime. The contaminated rooms are sealed for one month if possible.

The method of supervision in larger cities and along the railroad is somewhat different. Local passenger traffic in the affected regions is stopped. At strategic points, quarantine stations are established. March 1, such a station was placed at Ch'ang Ch'un about 150 miles south of Harbin on the railroad line from Harbin south to Mukden. Here all passengers from the north of the first and second class are inspected, and all of the third class passengers are held in quarantine for five days. Ten cases have been picked up at this point within two weeks. Other stations are being established on the railroad in the neighborhood of the recent center of the disease.

In cities like Hailar and Harbin, hospitals have been established for frankly infected cases, suspected cases and contact cases. According to the number of the personnel, the whole city is canvassed daily or as frequently as possible by districts. When cases are found, the inmates of the house are distributed to the hospitals mentioned above as their condition indicates. The house is sealed. Contacts and suspected cases are kept apart individually until the period of incubation has passed. After seven days they are released, but the infected premises are not used for a month. This treatment of the infected houses seems to be more satisfactory than fumigation.

TRANSMISSION OF PLAGUE

Dr. Young states that epidemics of plague frequently start with the bubonic type of infection, which is evidently flea borne, and then change to the pneumonic type, which is evidently man borne and transmitted from patient to patient by droplet infection. This was strikingly true in this epidemic. He has never seen a case of bubonic plague develop in a person in contact with a pneumonic patient, although there must be very gross contamination of exposed surfaces of contacts. He knows of no case which has developed in those handling the dead bodies, although cases have been reported which were said to arise from contact with fomites, long after the death of the patient. He knows of no case, in which the diagnosis of pneumonic plague had been definitely made, in which the patient has recovered.

The check on transportation necessary in the prevention of spread of plague threatens to be a serious handicap to famine relief.

Marriages

WILLIAM C. MUNLY, Lieut., M. C., U. S. Army, on duty at Coblenz, Germany, to Miss Lillian May Melhuish of Brickenhead, Cheshire, England, at Coblenz, March 6.

SIMON BRETZFELDER KLEINER, New Haven, Conn., to Miss Regina Frances Wendel of Piqua, Ohio, April 19.

DAVID ALBERT LEVINE, Iron River, Mich., to Miss Hazel Miller of Chicago, April 7.

Deaths

Charles Beylard Guérard de Nancréde, Ann Arbor, Mich.; University of Pennsylvania, Philadelphia, 1869; Jefferson Medical College, 1883; aged 73; emeritus professor of surgery and clinical surgery in the University of Michigan, Ann Arbor, and Dartmouth Medical College, Hanover, N. H.; major and chief surgeon, U. S. Volunteers during the Spanish-American War; at one time surgeon to Episcopal, Jefferson, and St. Christopher's hospitals, Philadelphia; a member of the Association of Military Surgeons of the United States; a member and in 1908 president of the American Surgical Association; a well known author and contributor to literature on surgery; died, April 12.

Leo John Joseph Commiskey ✠ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1904; aged 42; major, M. C., U. S. Army, and discharged, March 5, 1919; gynecologist and obstetrician to Kings County and Bradford Street hospitals, Brooklyn, and Mercy Hospital, Hempstead, L. I.; died, April 15, following an operation for appendicitis.

Andrew Reginald Wentworth, Med. Dir., Capt., M. C., U. S. Navy (retired) ✠ Kittery, Me.; Dartmouth Medical School, Hanover, N. H., 1881; aged 61; entered the Navy, April 22, 1885, and was retired, Feb. 7, 1919; died at the U. S. Naval Hospital, Portsmouth, N. H., April 13.

Perry Crittenden Williams, Siloam Springs, Ark.; Cleveland Medical College, 1891; aged 52; major, M. C., U. S. Army, and discharged, April 1, 1919; a member of the homeopathic board of medical examiners of Arkansas; died, April 3, from nephritis.

Ernest Schalck, Brooklyn; University of Wurzburg, Germany, 1882; aged 61; ophthalmologist to Wychoff Heights Hospital and Bethany Deaconess Home and Hospital; surgeon to Knapp Memorial Hospital; died, April 15, from heart disease.

William Henry Bowen, South Scituate, R. I.; Dartmouth Medical School, Hanover, N. H., 1864; aged 81; a member of the Rhode Island Medical Society; a practitioner of South Scituate for more than half a century; died, April 13.

Samuel V. Fiery, Martinsburg, W. Va.; University of Maryland, Baltimore, 1888; aged 59; died, April 8, from a gunshot wound, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

John M. Neel ✠ Dallas, Texas; Memphis (Tenn.) Hospital Medical College, 1888; aged 57; at one time president of the Dallas County Medical Association; a member of the staff of Baptist Sanitarium, Dallas; died, March 19.

Joseph Fewsmith ✠ Newark, N. J.; College of Physicians and Surgeons in the City of New York, 1874; aged 69; a member of the surgical staff of St. Michael's Hospital, Newark, for thiry-five years; died, April 8.

Alfred N. Boe, Chicago; National Medical University, Chicago, 1903; aged 61; a member of the Illinois State Medical Society; also a druggist; died at the Swedish Convenant Hospital, April 17, from pyonephrosis.

Frank Pease Howser, Otisville, N. Y.; Bellevue Hospital Medical College, 1891; aged 59; a member of the Medical Society of the State of New York; health officer of the town of Mount Hope; died, March 24.

Lawrence Chesley Chisholm ✠ Boston; Tuft's College Medical School, Boston, 1917; aged 29; assistant surgeon, lieutenant (j. g.), U. S. N. R. F., and relieved from active duty, April 29, 1920; died, April 2.

Austin I. Harvey, Bangor, Maine; Homeopathic Medical College of Pennsylvania, Philadelphia, 1878; aged 67; a member of the Maine Board of Registration of Medicine since its organization; died, April 10.

John Gavin Morris, Boston; Harvard University Medical School, 1882; aged 64; a member of the Massachusetts Medical Society; physician to St. Elizabeth's Hospital for twelve years; died, April 14.

Frederick Kolbenheyer, Omaha; University of Vienna, Austria, 1868; aged 77; a member of the Missouri State Medical Association; a practitioner of St. Louis for forty-seven years; died, April 8.

Albert Fred Peck, Spencer, Mass.; University of Vermont, Burlington, 1887; aged 57; a member of the Massachusetts Medical Society; died, March 31, from heart disease.

✠ Indicates "Fellow" of the American Medical Association.

Herschel Virgil Baskin, Coats Bend, Ala.; University of Alabama, Mobile, 1898; aged 46; a member of the Medical Association of the State of Alabama; died, April 8, from Bright's disease.

John Ford Hager, Newark, N. J.; College of Physicians and Surgeons in the City of New York, 1873; aged 69; a member of the Medical Society of New Jersey; died, April 1, from diabetes.

MacClarey Weeks ✠ Galesburg, Ill.; Northwestern University Medical School, Chicago, 1902; aged 49; at one time president of the Knox County Medical Society; died, suddenly, April 19.

Norman Richards Jenner ✠ Washington, D. C.; Howard University, Washington, D. C., 1890; Georgetown University, Washington, D. C., 1891; aged 58; died, April 14, from heart disease.

Charles Colline Stuart ✠ Cleveland; Western Reserve University, Cleveland, 1895; aged 54; ophthalmologist to German, City and Charity hospitals, Cleveland; died, April 11.

George W. Lowry, Verona, Miss.; Kentucky School of Medicine, Louisville, 1880; aged 63; a member of the Mississippi State Medical Association; died, April 6.

George W. Chase, Portland, Maine; Eclectic Medical College of the City of New York, 1871; died suddenly, April 9, while on a fishing trip at Raymond, Maine.

Jacob William McClendon ✠ Hot Springs, Ark.; Vanderbilt University, Nashville, Tenn., 1881; aged 63; mayor of Hot Springs since 1912; died, April 12.

George Emerson, Winfield, Kan.; Albany (N .Y.) Medical College, 1873; aged 73; a member of the Kansas Medical Society; died, April 10, from nephritis.

James W. Dickerson, Wingate, Ind.; American Eclectic Medical College, Cincinnati, 1893; aged 67; died, April 4, from carcinoma of the bladder.

Cornelius S. Eldridge, Chicago; Homeopathic Medical College of the State of New York, 1868; aged 79; a veteran of the Civil War; died, April 19.

George W. Hawley, Detroit (license, Michigan, 1900); aged 74; a practitioner of Detroit for forty-five years; died, April 6, from cerebral hemorrhage.

Oren Andrews ✠ Gardner, Mass.; College of Physicians and Surgeons, Baltimore, 1895; aged 57; died, April 2, from cerebral hemorrhage.

Harvey J. Cristman, Herkimer, N. Y.; Albany (N. Y.) Medical College, 1864; aged 80; died, April 8, from injuries received in a fall.

George B. Thompson, Winthrop, Iowa; University of Toronto, Ont., 1880; aged 64; died, February 27, from cardiovascular disease.

Sewell S. Hepburn, Jr. ✠ Annapolis, Md.; Medical College of Virginia, Richmond, 1897; aged 46; died, April 5, from heart disease.

George R. Hill, Kendall, Wis.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1886; aged 69; died, March 18.

Warren Sherman Webb, Memphis, Tenn.; Louisville (Ky.) Medical College, 1891; died, March 29, from tuberculosis.

John Klemanz Meyers, Grand Rapids, Mich. (license, Michigan, 1902); aged 48; died, April 5, from pneumonia.

Charles M. Brown, New Marion, Ind.; College of Physicians and Surgeons, Keokuk, Iowa, 1879; died, April 6.

W. F. Hammack, Atlanta, Ga.; Atlanta (Ga.) Medical College, 1888; aged 52; also a druggist; died, April 4.

William Thomas Boyce, Lockesburg, Ark.; Missouri Medical College, St. Louis, 1881; aged 80; died, April 1.

James A. Hubbell, Quincy, Ohio; Starling Medical College, Columbus, Ohio, 1871; aged 76; died, April 5.

Oliver Hazard Perry McNair ✠ Oklahoma City; Rush Medical College, 1892; aged 52; died, April 3.

William T. Williamson, Harrington, Del.; Jefferson Medical College, 1856; aged 94; died March 26.

Joseph M. Vaden, Ada, Okla.; Vanderbilt University, Nashville, Tenn., 1891; aged 58; died, April 7.

Charles Frederick Elliott, Bradford, Pa.; University of Buffalo, 1902; aged 42; died, April 5.

Martin Van Buren Montgomery, Opdyke, Ill. (license, Illinois, 1878); aged 83; died, April 8.

Herman E. Lucas, Champlin, Minn. (license, Minnesota, 1883); aged 70 died, March 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the U. S. Department of Agriculture

Antibrule.—The Crescent Chemical Co., Fort Worth, Texas, shipped in July, 1919, a quantity of this product which was declared misbranded. The Bureau of Chemistry reported that analysis showed the preparation to consist essentially of a watery solution of picric acid and a small quantity of picrates. The labels declared that the preparation was effective as a remedy for croup, tonsilitis, carbuncles, gonorrhea, leucorrhea, eczema, nasal catarrh, itching piles, etc. These claims were declared false and fraudulent. In June, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8359; issued Feb. 19, 1921.*]

Burkhart's Vegetable Compound.—A quantity of this preparation shipped by Dr. W. S. Burkhart, Cincinnati, Ohio, in July, 1920, was declared misbranded. The Bureau of Chemistry analyzed the preparation and reported that it consisted essentially of aloes, capsicum (red pepper) and plant extractives, including resins, probably podophyllum. It was falsely and fraudulently recommended for "Kidney and Liver Disease, Fever and Ague, Rheumatism, Sick and Nervous Headache, Erysipelas, Scrofula, Female Complaints, Catarrh, Indigestion, Neuralgia, Nervous Affection, Dyspepsia . . . and all syphilitic diseases." Judgment of condemnation and forfeiture was entered August, 1920, and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8349; issued Feb. 21, 1921.*]

S. O. S.—In April, 1919, the S. Pfeiffer Mfg. Co., St. Louis, Mo., shipped a quantity of S. O. S. which the government officials declared was misbranded. The Bureau of Chemistry reported that the product consisted of two preparations, an "injection" and gelatin "pearls" for internal use. The injection was essentially a water-solution containing thymol, zinc and magnesium sulphates and glycerin. The pearls contained a mixture essentially of santal oil, copaiba balsam, oil of cinnamon and a fixed oil. The stuff was falsely and fraudulently represented as an effective remedy for gonorrhea and gleet "whereas it was not effective." In December, 1919, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8454; issued March 11, 1921.*]

Osgood's Special Capsules.—In May and February, 1919, H. Planten & Son, Brooklyn, N. Y., are alleged to have shipped to California a quantity of this preparation which the federal authorities charged was misbranded. The chemists of the Bureau reported that it consisted of volatile gurjun oil, a phenolic compound and a sulphurated fixed oil. It was falsely and fraudulently represented as a valuable remedy for obstinate cases of gonorrhea, inflammation of the bladder and all discharges. In November, 1919, the claimants, Osgood Bros., Oakland, Cal., having consented to a decree, judgment of condemnation and forfeiture was entered and the court ordered that the product be delivered to the claimant upon payment of the cost of the proceedings and the execution of a bond in the sum of $100.—[*Notice of Judgment No. 8544; issued March 12, 1921.*]

Gin-berry Capsules.—In April, 1919, the Henry S. Wampole Co., Baltimore, Md., is alleged to have shipped a quanity of Gin-berry Capsules which the government officials declared misbranded. Analysis of a sample by the Bureau of Chemistry showed that it consisted of a mass composed essentially of cubebs, balsam of copaiba, santal oil, magnesia and alum. It was falsely and fraudulently represented as an effective remedy for clap, gonorrhea, gleet, or any discharge from the urinary organs, "whereas it was not effective." In December, 1919, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8511; issued March 12, 1921.*]

Benetol Vaginal Suppositories.—The government officials seized 162 packages of vaginal suppositories shipped by the Benetol Co., Minneapolis, Minn., in August and October, 1919. Analysis of samples showed that the suppositories consisted essentially of alpha and beta naphthol, boric acid and traces of menthol and phenol (carbolic acid) in a cacao butter base. The suppositories were falsely and fraudulently represented to be effective for the treatment of leucorrhea, vaginitis, vulvitis, cervicitis, endometritis, gonorrhea, for the treatment of sexual diseases and as a general disinfectant and local tonic "whereas it contained no ingredient or combination of ingredients capable of producing the effects claimed." In January, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8397; issued Feb. 19, 1921.*]

Mowerys Gonorrhea Paste.—The Binkley Medicine Co., Dayton, Ohio, shipped in December, 1918, a quantity of this preparation which was declared misbranded. Analysis showed the preparation to consist essentially of powdered cubebs, copaiba balsam, alum and magnesia. It was falsely and fraudulently represented as an efficient treatment for gonorrhea, gleet and all discharges peculiar to the urinary organs, no matter how long standing. In October, 1919, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8481; issued March 11, 1921.*]

Correspondence

"BASAL METABOLISM DETERMINATIONS WITH THE ORIGINAL PORTABLE BENEDICT APPARATUS"

To the Editor.—Dr. F. G. Benedict has been kind enough to call my attention to an error made by my clinical assistant in getting the data for the calculation in the case referred to in my recent article (THE JOURNAL, April 9, 1921, p. 978), and which I overlooked. The error was due to the fact that he had been calculating from the oxygen consumption for one minute, as recommended by Benedict, and adding the correction of 1 c.c. for each rise of 1 degree Fahrenheit which was, of course, in the process of the calculation then multiplied by the number of minutes of the observation. This meant that he had been adding this correction only once, and in changing the calculation to the basis of seconds instead of minutes and including the entire volume consumed, the correction was made the same as usual without taking into account the number of minutes; hence the error.

As Dr. Benedict points out, 60 c.c. (for eight and one-third minutes) should have been added instead of seven, which makes an error of about 2 per cent. While a variation of 2 per cent. in the basal metabolic rate would not change the clinical judgment in any case, it is as a matter of course

unpardonable in a mathematical calculation in which the greatest possible accuracy is desirable. It is one of the practical difficulties in the clinical application of basal metabolism determinations that the individual "norms" vary over a range of 20 per cent. It might seem on the face of it that a 2 per cent. error would be negligible; but, as I have attempted to emphasize in the article just published, such is not the case. I, therefore, hasten to make the correction with apologies.

It so happens that for a certain reason I submitted the manuscript of that paper to Dr. Benedict who, like myself, overlooked the error. For this reason he generously authorizes me to say that he shares the responsibility for it. Of course he really has no responsibility whatever, and I merely mention it to furnish some little palliation of my own carelessness in also overlooking it. It is worth noting that an expert technician from the manufacturer of the basal metabolism apparatus which I am using happened to call at my office just before the paper was sent to The Journal, looked over the calculation, commented upon it, and missed the error.

Dr. Benedict deprecates the wide popularization of the method because of the liability to technical errors, and asks whether this error, which crept into my own work in spite of all my precautions, "is not an admirable text for a sermon on the use of refined clinical methods without every precaution in check." While admitting the force of his arguments, I cannot fully coincide with his point of view, and feel that basal metabolism determinations like the Wassermann test and other very technical things "must come into their own" even though, as in other instances, they have to travel a somewhat stony road. Their importance and value are so obvious that their use is bound to become general, and in my opinion should be. The easier and simpler the technical methods can be made without sacrifice of accuracy, the better will be the results in the field of clinical medicine. It is no longer a question of their general use but rather a question of their accuracy, and this is the reason why, after a couple of years of fairly close study of the subject from a clinical point of view, I attempted, as I thought, although Dr. Benedict does not fully agree with me, to make it simpler and easier. There is, of course, no question as to the entire accuracy of the method proposed.

G. W. McCaskey, M.D., Fort Wayne, Ind.

"PROGRESS IN THE STUDY OF MEASLES"

To the Editor:—In your editorial of April 23 on progress in the study of measles, you state that "the best prospect of prevention seems at present to lie in the possibility of protective inoculation, as is true in smallpox." All those who have studied the subject are agreed that this is the only way in which the morbidity and mortality from measles can be reduced. As in smallpox it is not necessary that the virus should be identified and isolated; the infectious material is definitely known to be present in the secretion from the nasal mucous membrane. This mucus suffices for inoculation and immunization. With this in mind, I began in 1913 to immunize infants between 4 and 5 months of age, and described the method, together with a report on forty infants who were immunized, in the *Archives of Pediatrics* (**32**:503, 1915). I have also discussed the subject and reported on 122 immunized infants, in an article on measles in Abt's "New System of Pediatrics," which will be published this year, and in the discussion on Blake's paper on "Measles Experimentally Produced" (*Arch. Pediat.* **38**:100, 1921). Although the method that I have employed will require perfecting in order to make it universally applicable, I believe that the principles on which it is based are sound.

Charles Herrman, M.D., New York.

THE SHEPPARD-TOWNER BILL

To the Editor.—I wish very much that the medical profession would take up the matter of the Sheppard-Towner bill before it is too late! I believe intensely in the care of childbirth, but deplore this particular bill. Indeed, I feel peculiarly strongly the great importance of prenatal care, as the five-year experiment in prenatal care made by the Women's Municipal League of Boston from 1909 to 1914 was carried on by me, and on this experiment was founded the work of the Boston Lying-In Hospital, that of the New York Milk Committee—which has now been taken over by the Maternity Center—Dr. Ballantyne's work in Edinburgh, as he himself wrote me, and I believe also Dr. Truby King's in New Zealand and others—and scarcely a week passes that I am not in receipt of requests for information from some one on the subject.

For corroboration of my right to speak with some knowledge I would refer you also to an article published in The Journal, Jan. 30, 1915, by Dr. Franklin S. Newell, on an experiment which I made on the blood pressure of pregnancy, and especially to the first page of Dr. J. Whitridge Williams' recent article on syphilis as a cause of infant mortality, which was published in the *Bulletin of the Johns Hopkins Hospital*, a reprint of which he recently sent me.

I mention these things merely to show you how strongly I believe in prenatal care and that I am somewhat qualified to speak on the subject.

The Sheppard-Towner bill seems to me very objectionable:

1. Because matters of public health which are not concerned in any way with foreign or interstate commerce (as, for instance, are matters of quarantine and epidemics) belong to the individual states to carry on, as they come properly under the police power, which the states have never granted to the federal government.

2. Provided that, in spite of this fact, the bill is considered constitutional, it is objectionable because the care of pregnancy, childbirth and the puerperium is clearly a medical matter, and the effort which was made at the hearing before the House committee to prove that the social and economic matters affecting pregnancy were of more importance than the medical is sheer nonsense. It reminds one of the old conundrum, "If you call a dog's tail his leg, how many legs will he have?" He will have four, because calling a tail a leg does not make it so!

The statement that "all the women in the country" endorse this bill is not true. Every woman with whom I have talked it over I have found agrees with me, and the thousands of women belonging to the Women's Municipal League of Boston have given me their endorsement in this matter. The hearings have been carried on as if the fact that a woman had borne a child, or, indeed, just happened to be a woman, entitled her per se to medical knowledge on the subject of the proper care of childbirth. As well take the opinion on digestion of every one who is in the habit of eating three meals a day.

The bill will do good. Almost any bill bearing on this subject, administered in almost any way, is sure to do good, because the conditions are now so very bad that almost any plan can hardly fail to improve them. But must we stop at an inferior thing? Must we save perhaps 50 per cent. of the women and babies who might be saved and leave the other 50 per cent. waiting probably many years to get the help they need—for a bill that will improve matters at all will make it difficult to pass any better one within any reasonable time. In order to do the 100 per cent. of good which ought to be accomplished, not only to save the lives of these women and children but, what is far more important, to make them healthy, vigorous members of the community, the very best medical knowledge is required; and if the Public Health

Service has not at present the right type of man to administer this bill, he should be found and under that service it should be administered, not under a lay official head of a bureau in the Department of Labor.

MRS. WILLIAM LOWELL PUTNAM, Boston.

[COMMENT.—In a former editorial on this bill (THE JOURNAL, Feb. 5, 1921, p. 383) we pointed out that it was economically unsound through its method of raising money; that its centralized administration was a serious fault, and that the conditions which it wished to control were clearly matters of local or state responsibility. The claim has been made that the women and women's organizations are unanimously for this bill. Mrs. Putnam's letter emphasizes that the statement is, as has been known, actually not founded on fact.—ED.]

COURT MEDICAL SERVICE

To the Editor:—In a recent number of THE JOURNAL, under Medical News from Massachusetts, it was stated that a physician had been appointed probation officer at one of the Massachusetts courts, and that with the exception of the Municipal Court of Boston, this was the only court in the country to which a physician was officially attached. I take the liberty, therefore, of calling your attention to the medical service attached to the courts of Baltimore which has been in existence for the last four years. This medical service covers not only the mental examination of prisoners, but also all medicolegal questions that arise under the jurisdiction of the Supreme Bench of Baltimore. As the chief medical officer of this service I am officially a member of the court, with a definitely recognized position in the municipality. My office deals with a great number of medicolegal matters, from necropsies in cases in which murder is suspected, from the examination of blood stains and foot prints, down to the physical and mental examination of prisoners and accused persons. In other cities the medical service usually confines itself to the mental aspects of penology. Our Baltimore medical service has, however, been founded on broader lines, and is planned to embrace all questions of medical jurisprudence.

We also have a medical service in connection with our Prisoners' Aid Association, of which I am chief medical officer. This medical service deals with the physical and mental condition of all persons who are before the courts for trial, and of all those persons who, having served a sentence, are released in our care. It also forms a connecting link between the court medical service and the physicians who are in charge of prisoners in our jails and penitentiaries. In this way we are able to cover the mental and physical conditions of accused persons from the time of their arrest through their trial and through their prison sentence, down to and including the time of their release, and of their readaptation to the social life of the community.

JOHN R. OLIVER, M.D., Baltimore.
Medical Officer, Supreme Bench of Baltimore.

ALLERGY IN DISEASES OF THE SKIN

To the Editor:—An editorial on the phenomena of allergy in diseases of the skin (THE JOURNAL, April 9), brings to my mind the possibility of some of the unfortunate reactions following vaccination against smallpox, being due to allergy. One who has had occasion to vaccinate large numbers of people occasionally observes complications that cannot be attributed to infection or other obvious reasons. Well known writers, such as Schamberg, state that it is possible for quite a variety of skin disorders to follow vaccination. Many have regarded these rare complications as a coincidence instead of a result of the vaccination. Vaccine virus contains various proteins. The work that has been done by Walker and others shows that a small percentage of children are sensitive to veal, so I believe it reasonable to assume that certain of the annoying complications arising from vaccination may be due to allergy.

J. W. ROBINSON, M.D., Los Angeles.
Deputy Health Officer.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

OXALATES IN URINE

To the Editor:—Please tell me how the oxalates are formed in the urine and what is the cause of their formation. What is the significance of an increase of oxalates in the urine, and how can it be prevented? Can you suggest a diet for these patients? Please do not refer me to literature, as we are in a mining district and far from any cities.

D. J. LOUIS, M.D., San Juan, Coah., Mexico.

ANSWER.—The origin of oxalic acid in the urine is twofold: The smaller output arises presumably from carbohydrates, or, possibly, is synthesized in the body from uric acid. As a rule, it occurs normally in the urine to the extent of from 0.02 to 0.12 gm. each twenty-four hours. The greater output is from ingested food which contains oxalic acid. Foods rich in oxalic acid are rhubarb, spinach, tomatoes, carrots, celery, string beans, strawberries, cranberries and, to lesser degree, potatoes, tea, coffee, coca and plums. The occurrence of oxalates in the urine, except in very large amounts, is not to be regarded as a danger sign. An increased elimination is observed in association with various so-called dyspeptic and nervous manifestations (oxalic acid diathesis), and, sometimes, in diabetes. Constant large amounts may predispose to the formation of kidney calculus. To diminish the elimination of oxalic acid, the foods mentioned that contain oxalic acid should be eliminated from the diet.

ALUMINUM POTASSIUM NITRATE

To the Editor:—I should like to know where I may obtain some of the double salt of aluminum, namely, aluminum potassium nitrate, $Al(NO_3)_3.3KNO_3.10H_2O$, as advocated in the July 17, 1921 issue of the *Chicago Medical Bulletin*, for the treatment of osteomyelitis, under a preliminary report on the treatment of chronic infections and chronic osteomyelitis by aluminum potassium nitrate (La Porte treatment). Please omit my name.

V. W. E.

ANSWER.—We are informed that the product is not being marketed. The product, which is said to be used, has been analyzed for the Council on Pharmacy and Chemistry in the Association's Chemical Laboratory. In the *Chicago Medical Bulletin* the authors state that "a true synthetic double salt," aluminum potassium nitrate, $Al(NO_3)_3.3KNO_3.10H_2O$, was employed; later the firm supplying the preparation claimed that it is composed of one part of the double salt mixed with nine parts of potassium nitrate. However, analyses by the A. M. A. Chemical Laboratory showed the preparation to be equivalent to 2.35 per cent. of $Al(NO_3)_3.3KNO_3$ and 94.7 per cent. of potassium nitrate. For practical purposes the preparation, as submitted by the manufacturer and analyzed by our laboratory, may be regarded as a mixture of 97.5 per cent. of potassium nitrate U. S. P. (saltpetre) and 2.5 per cent. of aluminum nitrate (which may be purchased from chemical supply houses).

STERILIZATION OF SHAVING BRUSHES

To the Editor:—Having in mind anthrax contamination, I should be pleased to see in your columns a satisfactory method for sterilization of the ordinary shaving brush after its parts are assembled.

A. T. HOLBROOK, M.D., Milwaukee.

ANSWER.—A procedure believed to be effective was given in *Public Health Reports* (**34**:993 [May 9] 1919). The brush should be soaked for four hours in a 10 per cent. dilution of liquor formaldehydi. The solution should be kept at a temperature of 110 F. and the brush so agitated as to bring the solution into contact with all hair or bristles.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, May 10. Sec., Reg. Bd., Dr. T. J. Stout, Brinkley. Sec., Eclectic Bd., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.

FLORIDA: Jacksonville, June 13-14. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.

GEORGIA: Augusta, June 1-3 and Atlanta, June 8-10. Sec., C. T. Nolan, Marietta.

KENTUCKY: Louisville, May 10. Sec., Dr. A. T. McCormack, Sixth and Main Sts., Louisville.

LOUISIANA: New Orleans, May 3. Sec., Homeopathic Bd., Dr. F. H. Hardenstein, 702 Macheca Bldg., New Orleans. June 9-11. Sec., Reg. Bd., Dr. Roy B. Harrison, 1551 Canal St., New Orleans.

MICHIGAN: Ann Arbor, June 14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MISSOURI: St. Louis, June 13-15. Act. Sec., M. E. Holliway, State House, Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS, Boston, June 14-21. Sec., Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia.

NEBRASKA: Lincoln, June 7-9. Sec., Mr. H. H. Antles, Dept. of Public Welfare, State House, Lincoln.

NEVADA: Carson City, May 2. Sec., Dr. S. L. Lee, Carson City.

NEW YORK: Albany, Buffalo, New York and Syracuse, May 23-26. Ass't., Professional Examinations, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

OHIO: Columbus, May 31-June 1-3. Sec., Dr. H. M. Platter, State House, Columbus.

TENNESSEE: Memphis, Nashville and Knoxville, June 10-11. Sec., Alfred B. De Loach, 1001 Exchange Bldg., Memphis.

VIRGINIA: Richmond, June 14-17. Sec., Dr. J. W. Preston, 511 MacBain Bldg., Roanoke.

New York October Examination

Mr. Herbert J. Hamilton, assistant, professional examinations, New York State Board of Medical Examiners, reports the written examination held at Albany, Buffalo, New York and Syracuse, Oct. 4-7, 1920. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 189 candidates examined, 143, including 4 osteopaths, passed, and 46, including 3 osteopaths, failed. One candidate was licensed by reciprocity, and two candidates were licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Number Licensed
Yale University		(1920)	2
George Washington University		(1916)	1
Georgetown University		(1913)	1
Howard University		(1914) 1, (1919) 1, (1920) 1,	3
State University of Iowa College of Medicine		(1918)	1
College of Physicians and Surgeons, Baltimore		(1912)	1
Johns Hopkins University		(1916) 1, (1917) 1, (1918) 1, (1919) 1, (1920) 1,	5
University of Maryland		(1920)	1
Harvard University		(1906) 1, (1913) 1, (1917) 1, (1918) 2, (1919) 1, (1920) 2,	8
Tufts College Medical School		(1917)	1
University of Michigan Medical School		(1916) 1, (1920) 1,	2
University of Michigan Homeo. Medical School		(1918)	1
Detroit College of Medicine and Surgery		(1917)	1
University of Minnesota		(1919)	1
Dartmouth Medical School		(1905)	1
Albany Medical College		(1920)	1
Columbia University		(1914) 1, (1917) 1, (1919) 6, (1920) 11,	19
Cornell University		(1916) 1, (1917) 1, (1918) 1, (1919) 3, (1920) 6,	12
Fordham University		(1915) 1, (1918) 1, (1920) 6,	8
Long Island College Hospital		(1920)* 1, (1920) 13,	14
New York Homeo. Med. Coll. & Flower Hospital		(1916) 1, (1917) 2, (1919) 1, (1920) 6,	10
Syracuse University		(1920)	1
University and Bellevue Hosp. Med. College		(1920)	24
University of Buffalo		(1920)	2
Eclectic Medical College		(1920)	2
Hahnemann Medical Coll. and Hosp. of Philadelphia		(1918)	1
Jefferson Medical College		(1919) 1, (1920) 1,	2
University of Pennsylvania		(1912) 1, (1920) 1,	2
University of Vermont		(1919)	3
McGill University		(1920)	1
Queen's University		(1920)	2
University of Havana		(1917)*	1
University of Bologna		(1912)*	1
University of Berne		(1919)*	1
Syrian Protestant College, Beirut		(1905)*	1
University of Caracas, Venezuela		(1915)*	1
Howard University Med. Coll.	FAILED	(1911) 1, (1912) 1, (1920) 2,	4
University of Louisville		(1902) 1, (1914) 1,	2
University of Maryland		(1918) 1, (1920) 1,	2
Harvard University		(1918) 1, (1919) 1,	2
University of Michigan Medical School		(1919)	1
Albany Medical College		(1916)	1
Columbia University		(1919)	1
Cornell University		(1919)	1
Fordham University		(1916) 1, (1917) 1, (1920) 2,	4
New York Homeo. Med. College and Flower Hospital		(1914) 1, (1915) 1, (1916) 1, (1918) 2, (1920) 1,	6
University and Bellevue Hosp. Med. Coll.		(1917) 1, (1920) 2,	3
Eclectic Medical College		(1915) 1, (1920) 2,	3
University of Oregon		(1920)	1
Hahnemann Med. Coll. and Hosp. of Philadelphia		(1920)	2
Jefferson Medical College		(1915) 1, (1919) 2,	3
Medico-Chirurgical Coll. of Philadelphia		(1916)	1
Vanderbilt University		(1914)	1
University of Vermont		(1916) 1, (1918) 1,	2
Medical College of Virginia		(1915)	1
McGill University		(1915)	1
Syrian Protestant College, Beirut		(1912)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California		(1902)	California

College	LICENSED BY ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Queen's University		(1919)*	Canada
University of Lemberg		(1914)*	Austria

* Graduation not verified.

Hawaii January Examination

Dr. Guy C. Milnor, secretary, Hawaii Board of Medical Examiners, reports the written examination held at Honolulu, Jan. 10-13, 1921. The examination covered 8 subjects and included 40 questions. An average of 75 per cent. was required to pass. Of the 9 candidates examined, 8 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles		(1919)	88
Northwestern University		(1912)	75
Jefferson Medical College		(1911) 82, (1920)	87
University of Pennsylvania		(1920)	83
University of Texas		(1920)	75
University of Virginia		(1895)	75
University of Munich		(1910)*	81
Osaka Prefecture Higher Medical School	FAILED	(1914)*	30

* Graduation not verified.

Social Medicine, Medical Economics and Miscellany

PUBLIC HEALTH ACTIVITY AND PRIVATE PRACTICE IN VENEREAL DISEASE CONTROL

JOHN H. STOKES, M.D.

Chief of the Section of Dermatology and Syphilology, Mayo Clinic

ROCHESTER, MINN.

The tremendous impetus imparted by the war to every form of public activity has been shared by governmental participation in the control of disease. Enormous resources in funds and organization have been concentrated on the medical problems involved in the physical welfare of the belligerent nations. In no field has the influence of this extension been more beneficent than in that of the venereal diseases. This particular movement through the generous appropriation of Congress and the efforts of civilian, military and Public Health organizations, both state and national, has developed a kinetic energy at least as great as that of any other outstanding campaign against a problem in disease. The energy back of this movement is all too little understood or appreciated by many physicians. Immeasurable good has and will come of it.

A movement so new and so vigorously prosecuted must inevitably disturb the conservatism of the old established sources of authority and action in its field. Problems will arise which can be met only by a frank declaration of principles from both the new and the old groups, and a frank adjustment of misconceptions and points at issue. The field of the medical control of venereal disease is at this time, I believe it is safe to say, nearer to socialization than is any other field of medicine.

A tremendous and, on the whole, disinterested public spirit is seeking, through public health officers, to sweep a group of controllable infections out of existence. A large body of equally well intentioned, though perhaps less energetic, private agents in the form of the medical profession at large and of specialists in private practice derives its livelihood, at least

in part, from the same source. An antagonism between public activity and private interest, which might so easily develop in such a situation, would be wholly unnecessary and deplorable. A spirit of mutual consideration and cooperation can utilize the energy of the public attack and the skill of the properly equipped man in private practice to the advantage of both.

The United States Public Health Service and the associated venereal disease divisions of various state boards of health have recognized the implications of their entry into this field of medical practice, and with a commendable frankness have drawn up and submitted to the state venereal disease control officers of all the states a declaration of principles and intentions in the form of resolutions for the consideration of the medical profession at large. The substance of these resolutions may be thus summarized:

They indorse and urge the continuance of a campaign of public education.

They urge the evaluation of the propaganda thus far carried on in as exact social, psychologic and medical terms as possible.

They give preference to education and persuasion over legal process in connection with the enforcement of laws and regulations. One of the resolutions adopted is worded as follows, and expresses what every worker, public or private, in this field acknowledges to be the fundamental steps for making the future of venereal disease work better than the past:

Resolved, That the venereal disease control movement cannot reach full effectiveness without the intelligent and sympathetic cooperation of the medical profession. This cooperation can best be obtained by:

1. The rapid extension of teaching facilities for medical students whereby knowledge of the medical, social and public health aspects of these diseases may be taught by actual contact with patients in the clinic under the direction of qualified teachers.

2. By making available to all physicians by means of clinics, lectures, demonstrations and institutes the most recent developments in medical and social knowledge of the veneral diseases.

3. By the development of state diagnostic facilities for the use of the practicing physician.

Having accepted its share of responsibility for developing an appropriate equipment, the Public Health Service and its affiliated state organizations urge physicians at large to move for a general raising of the standard of treatment of the venereal diseases. To no one whose daily work or special training forces on him an appreciation of the reality of the problem will this seem an unreasonable or unwarranted demand. In the words of the resolution:

This implies that a physician who is unfamiliar with or unprepared to employ modern methods in the management of these diseases should not accept such cases for treatment, but should refer them to some private or public physician who is properly equipped.

If the effectiveness of private effort can be raised by a combination of expertness in the individual physician and better facilities, to the point where victims of the venereal diseases can receive adequate treatment at private hands, the United States Public Health Service and the state boards of health pledge themselves so to conduct their activities as not to invade the field of private practice in this phase of medical work. In the words of the resolution:

Resolved, That while the United States Public Health Service and the state boards of health recognize their public duty to see that every victim of a contagious disease receives adequate treatment for his own and the public's safety, they have no intention of supplanting effective private effort in this field.

The representatives of the public health services concede and define the value and the basic requirements of training for this work. The words of the resolution, formulated as it is, at a time when the American Medical Association is seeking to raise the standard of postgraduate medical education, deserve quotation in full.

Resolved, That the development and maintenance of a competent medical personnel under effective leadership in the field of venereal disease control demands training whose duration and character is varied with the work for which preparation is sought; from six months for the routine performance of the technical work of treatment to three or more years for the preparation of men who are to assume the full medical and administrative responsibilities of the expert. For the purpose of such training, special postgraduate courses in association with medical schools and teaching centers providing liberal and accessible clinical material are essential. The development of such schools should be encouraged and active participation of their graduates in this work should be sought. The maintenance of an efficient personnel further requires the provision of inspiration and incentive to individual development and reward for initiative comprised in (*a*) adequate material equipment for laboratories and clinics; (*b*) adequate technical and medical assistance for the handling of routine work; (*c*) sufficient freedom from routine and provision of funds to make possible the conduct of research; (*d*) much more generous provision for the salary of personnel than is now the rule.

The public health authorities have frankly conceded that under existing conditions the Public Health Service cannot hope to offer a career with adequate returns to those who devote themselves exclusively to the work of venereal disease control. They recognize with equal justice the right of the highly trained man to seek in private practice the material return for special training and proficiency which public parsimony now denies him. By implication, the obliteration of private practice would destroy a major incentive to the thorough training and high efficiency on which the movement must depend for successful leadership.

So sincere and genuine an effort at cooperation as these resolutions represent, made by those who have unselfishly and often at large personal sacrifice devoted their whole energy to this movement, deserves the warmest response from the medical profession at large. It should be our privilege to bring our influence to bear to dignify public service in medicine with the recognition and emoluments which it deserves and which will attract leaders and supply the incentive for careers.

It is also our duty and to our interest to cooperate in the development of educational and diagnostic facilities and to raise the standard of the treatment accorded the patient with a venereal disease. A fair demand is made of us, *a demand that the medical practitioner shall practice modern diagnostic medicine in the venereal disease field or leave the work to those who can, and that he shall refuse to accept patients with syphilis and gonorrhea for treatment unless he has had an amount of training adequate for the work he attempts.* If he has the technical proficiency but lacks the experience he should seek the aid of expert advice and centralized facilities, public or private as the circumstances direct. No better method for obtaining these facilities could be suggested than, for example, the establishment of the health centers proposed by Dr. Billings.[1]

To continue to make the care of venereal disease an incidental among incidentals in private practice, and a sport for any tyro, will ultimately invite a public condemnation and discrediting of the medical profession at large whose severity will be great in proportion to the large share of public attention being concentrated on this field.

The extinction of private practice in venereal disease is not a consummation to be wished, but it will be one to be deserved if we cannot measure up by a process of internal organization and adjustment, to the standards of the most altruistic and energetic public agent in the field. It need never be said of us in the words of a widely known physician, that "any measures which make the treatment effective and tend to bring it into the hands of experts . . . will have to be carried out over the dead bodies of the medical profession." The United States Public Health Service and the state venereal disease bureaus, backed by one of the most powerful public sentiments now concentrated on any health problem, have expressed a desire for our cooperation and indicated a way for its achievement.

1. Billings, Frank: The Future of Private Medical Practice, J. A. M. A. **76**: 349 (Feb. 5) 1921.

Miscellany

VACCINATION FROM A NEWSPAPER'S POINT OF VIEW

The Washington, Iowa, *Evening Journal* is not a metropolitan newspaper, either in size or in circulation, but it is a newspaper that feels its responsibility to its readers as a truthful purveyor of truth and wisdom. The following editorial is copied from a recent issue.

OBJECT TO VACCINATION

A recent article in the *Journal* touching upon the advisability of vaccination as a preventive of smallpox results in the receipt in the *Journal* office of a protest, the protest in the form of a copy of a magazine, the whole issue devoted to the condemnation of the practice of vaccination.

The magazine cites instances where vaccination has failed to prevent smallpox and gives instances also where vaccination has resulted in deaths. No doubt the citations are true. It is conceivable that among the many millions of people vaccinated there may be some who die from the effects. A pin scratch sometimes results in death to the person injured.

The statement is made in the publication sent us that vaccination kills more people in the countries in which it is largely practiced than does smallpox. That is logical. Vaccination may eventually eliminate smallpox entirely, or at least temper its effects down to the point where there will be no deaths from smallpox, but an occasional death still from the effects of vaccination.

The greatest possible care should be taken in the preparation of the vaccine. Absolute cleanliness and a virus free from other contaminations are essential if the process of vaccination is to be robbed of its dangers. Millions upon millions of people have been vaccinated, and as they have been vaccinated the menace of smallpox epidemics has decreased. There may be other causes for the decrease of virulent smallpox epidemics; we don't know.

But, the charge made in this magazine to the effect that the vaccination method of fighting smallpox is based upon the selfish desires of medical practitioners to fatten their pocketbooks does not seem well founded to this writer. The same issues of the magazine cite instances where doctors who had been vaccinated took smallpox. Well, they took their own medicine. If they had not believed in vaccination why would they vaccinate themselves and carefully vaccinate their children and dearest friends?

The charge of dishonesty, selfishness, etc., is not well founded. Even doctors do not take the chance of murdering their best beloved for gain. Vaccination, or something, is depriving smallpox of its erstwhile questionable glory of being one of the most menacing of human contagions. Something is getting the smallpox "goat." Glory be for that!

The fact is that this attack upon vaccination is but one of the many attacks that is made by revolutionary zealots who are in for a general condemnation of medical science. Medical science makes its mistakes; has made them through all the centuries, but its course has been along an up-going trail. Medical science has made the waste places to blossom; has discovered the bases of many infections and removed them; brought joy and gladness to millions by its simple little ministrations; directed the processes that have made it possible for human beings to live in jungle lands and live comfortably and happily. Medical science will yet do much toward opening up the many millions of acres of tropical, miasmal lands that are not yet appraised at their full possible values; medical science does not hesitate to expose itself to danger, if necessary, in pioneering efforts to remove the danger; medical science does not seek out the easy places in which to make its bed but faces the danger zones in every corner of the earth and seeks to improve the health conditions everywhere. The mild little purgative, the lance, the forceps, the disinfectant, the anesthetic, all have been and are world blessings. They are the products of the ingenuity of medical science seeking to lessen the miseries of human life. They have accomplished all that.

Book Notices

INSECTS AND HUMAN WELFARE. An Account of the More Important Relations of Insects to the Health of Man, to Agriculture, and to Forestry. By Charles Thomas Brues, Assistant Professor of Economic Entomology, Bussey Institution, Harvard University. Cloth. Price, $2.50. Pp. 104, with 42 illustrations. Cambridge: Harvard University Press, 1920.

The author is assistant professor of economic entomology in the Bussey Institution of Harvard University. It is clear, therefore, that he is concerned primarily with the study of insects as they affect the life of man from a material point of view. As he points out in his introduction, "there are many more different kinds of insects than there are of other animals, and it follows from this that they will cross our path at many places." Unfortunately, he says, most insects are not directly useful to man. Only two, the honey bee and the silkworm, have a definitely useful purpose. A large majority of insects are harmful and, so far as appears today, cannot be diverted to any useful purpose. They must therefore be destroyed. The first chapter, the one of greatest interest to the physician, is concerned with insects and public health. This chapter appeared in the *Scientific Monthly;* but for book purposes it has been amended, and numerous illustrations have been added. It is an excellent discussion of the cost of our insect competitors in terms both of lives and of cash. The second chapter deals with food supply, the third with forest insects, the fourth with household insects, and the concluding chapter with the outlook for the future. The most promising outlook which the entomologist can enjoy is the decreasing prevalence of several of the most important insect-borne diseases, but the author believes that other disease-bearing insects may be expected to extend their range in the same way that all other insects are migrating. "Unpleasant surprises are doubtless now hidden in little known parts of the world," he says, "from whence they may spread without warning." Professor Brues' book is printed in easily readable type, is artistically arranged, and all of the illustrations actually illustrate.

THE ENDOCRINES. By Samuel Wyllis Bandler, A.B., M.D., F.A.C.S., Professor of Gynecology in the New York Post-Graduate Medical School and Hospital. Cloth. Price, $7 net. Pp. 486. Philadelphia: W. B. Saunders Company, 1920.

Few subjects have attracted the interest of physicians and medical scientists to the extent that endocrinology has during recent years. There is something infinitely attractive in the mystery of the subject. Although there are textbooks and a vast periodical literature on the ductless glands, that which is unknown far surpasses in quantity the actually demonstrated facts relative to these structures. According to the preface, "what is known of the endocrine glands is bearing more than sufficient root to form a working basis for the understanding of numerous hereditary, physical and psychic questions. Only by therapy and by the use of the extracts of these glands," he says, "can we be led to definite conclusions." The latter view must be considered as representing pure empiricism, and as we read Dr. Bandler's book, we realize that his point of view is throughout an empiric one. This book is really not a textbook, it is a series of essays giving the author's view on all kinds of human problems—heredity, habits and instincts, emotions, phobias, disease of body and mind—all reduced to terms of plus or minus in regard to some endocrine function or other. Like the Freudians, the author constructs a system of philosophy of his own. He makes use of some of their views and phraseology: "Repression of an act or function associated with or supposed to complete an emotion implies that some endocrine outpouring, instead of being used in the completion of the act and in supplying the stimulus or energy associated with that act, is exerting its action elsewhere and in other channels so that internal combination is going on instead of an explosion" (page 16). Analogous to Freudian symbols is the nucleus of a syllabus of endocrine symbolisms: "Judgment, wisdom, taste for books and literature, interest in the important problems, attract attention to a good anterior pituitary." "Fondness for children, normal libido, and feminine traits point to the posterior pituitary." Varicose veins suggest posterior

pituitary overactivity, as do uterine fibroids, "wanderlust," receding gums, pyorrhea, and exophthalmos, while a poor development of the outer half of the eyebrows implies a lack of thyroid. We all know the Freudian meaning of red. To fix its place as an endocrine symbol the author raises the question (page 271): "Why is it that a red rag irritates a bull?" Bandler's answer is that certain retinal cells in this animal by their autonomic nerve connections with the suprarenal glands transmit a stimulus which rouses these and associated glands with the resulting production of the instinct of pugnacity and the emotion of anger. (Incidentally, is the premise correct? Does a red rag irritate a bull any more than any other colored rag?) Tumors, benign and malignant, are all due to endocrine action, as are neuroses and psychoses except those caused by syphilis.

The author evidently expects this endocrine gospel to spread rapidly, for he ventures the prophesy that in five years there will be few new cases of mental defect, of insanity, tumors, diabetes and renal diseases. "When the next war comes, if it does at all, soldiers before going over the top will not be given alcohol: they will be given endocrine cocktails, and the adrenal cortex will be an important ingredient. And if the world in the near future administers to its diplomats, to its highest officials, to its legislators, and to its peoples the proper endocrines, especially anterior pituitary, and inhibits the adrenal cortex a little bit, there may be no more wars." In spite of (and partly because of) its many extravagances, parts of the book repay reading. The very bizarre way in which established clinical facts are correlated to fit new and unproved theories is stimulating to the imagination—a psychic field which grows hard, dry and covered with refuse if not occasionally plowed up. In justice to the author, it should be said that in applying his principles to his own field, that of gynecology, he uses his large clinical experience to good advantage and keeps in closer contact with the facts.

On the whole, however, the book is typical of the kind of scientific study which has made most physicians view the field of endocrinology with doubt and distrust. Progress cannot be made when theory so far outdistances that which is actually known.

LA EPIDEMIA DE GRIPPE DE 1918-19. Tesis Presentada para Optar al Titulo de Doctor en Medicina. Por Jose W. Tobias. Paper. Pp. 207. Buenos Aires: Libreria y Casa Editora de A. Guidi Buffarini, 1920.

The influenza epidemic of 1918-1919 is continually inspiring new studies which reflect the deep mark it made on the medical profession throughout the world. In this work, which received a prize from the Buenos Aires Medical School, the author has summarized the recent literature on influenza, combining at the same time observations of his own. Separate chapters are devoted to epidemiology, etiology, pathology and bacteriology, symptomatology, clinical types, and prophylaxis. Attention is called to the professional change toward this disease since the days of Broussais' *boutade*, "Grippe is an invention of penniless people and patientless physicians, who, having nothing else to do, have amused themselves creating this *farfadet*." Dr. Tobías does not consider Pfeiffer's bacillus as the specific agent of the disease, but a filtrable virus, as suggested by Nicolle and others. The most interesting chapter is the one devoted to pathology, comprising fifty-four pages, with twenty-five illustrations, in which the author reports his own and Dr. Ruiz' cases. Altogether the book is an interesting review of influenza as it appeared in Argentina.

REPRESSED EMOTIONS. By Isador H. Coriat, M.D. Cloth. Price, $2. Pp. 213. New York: Brentano's, 1920.

The author has said many things, the proof of which is not as clearly shown as is desirable. There is much that is merely time-consuming repetition. The chapter on repressed emotions in "primitive man" contains a number of very interesting observations, but beyond the statement that repressed emotions show themselves in the myths of primitive peoples, there are no noteworthy deductions. It seems stretching a point to affirm that psychanalysis alone can cure a neurosis, as does the statement that dementia praecox is amenable to psychanalysis. When the wonders of psychanalysis are heralded as they are in the introduction, they deserve a more convincing thesis than is contained in this book.

Medicolegal

Complaint for Not Obeying Order of Health Officer—Proof of Order

(City of Roslyn v. Pavlinovich (Wash.), 192 Pac. R. 885)

The Supreme Court of Washington says that the complaint charged that on or about Oct. 23, 1918, the defendant committed the offense of violating Section 1 of Ordinance 161 of the city of Roslyn in that he did wilfully and unlawfully refuse, fail and neglect to comply with the legal order of the health officer of the city, in that he permitted people to congregate at his place of business at No. 12 Pennsylvania Avenue, in said city, and play cards therein, etc. Section 1 of the ordinance mentioned provides that it "shall be unlawful for any person to refuse, fail or neglect to comply with any legal order of the health officer" of the city. It seems plain to the court that the complaint very directly charged that the defendant violated that ordinance by failing and refusing to obey certain health orders and regulations made by the city health officer. That was sufficient to charge a misdemeanor. The complaint was sufficient.

However, before the court could determine whether the defendant violated the order of the health officer, it must know what that order was. The order was in writing. It was given to the constable, who caused the inhabitants to become acquainted with its contents. The health officer testified that it had been sent to the state health officer; that he had tried to secure it for the purpose of this trial, but that it had not been returned to him; that there was no copy of the original order, unless it was in the hands of the mayor. No effort was made to show whether the mayor had a copy. The court considers that the testimony failed to show any reasonable effort to have the order in court, and that it was error to allow oral testimony as to its contents, in consequence of which the defendant must be granted a new trial. Oral testimony of the contents of a written instrument is not admissible until a satisfactory explanation is given for the failure to present the writing itself. The rule is that a reasonable effort must have been made to obtain the written instrument. As to what will be considered a reasonable effort is dependent to a considerable extent on the importance, in the case, of the written instrument. Nothing was shown in this case except that the city health officer had tried to get the written order, and that it had not been sent to him. Reasonable effort means much more than that. The court is entitled to know what was done, what effort was made. Likewise, it was error to permit the city attorney to testify that he had written to the state health officer for the original order, and had received a letter from him stating that it was not on file with him, no sufficient excuse being given for not having the letter itself in court.

Validity of Contract for Services

(Butler v. Oldham (Ark.), 224 S. W. R. 985)

The Supreme Court of Arkansas, in affirming a judgment for $150 in favor of the plaintiff, a physician, against the administrator of the estate of a Dr. Abbott, says that Dr. Abbott became seriously ill with pneumonia, and was removed to a hospital, where he remained until the date of his death under the constant care of nurses and two physicians. The plaintiff and Dr. Abbott were personal friends. During the afternoon of the day before Dr. Abbott died, one of the nurses at the hospital telephoned to the plaintiff, stating that Dr. Abbott asked him to come to see him. After finishing his professional calls for the day, the plaintiff procured an automobile and driver and went to the place where Dr. Abbott was, arriving at about 11 o'clock at night. He went immediately to see Dr. Abbott at the hospital, and remained with him until he died the next morning at about 7 o'clock. After the plaintiff reached the bedside of Dr. Abbott, the latter drew a check for $1,000, payable to the plaintiff, and gave it to the man who accompanied the plaintiff, with instructions to deliver the check subsequently to the plaintiff as compensation for his services in attending him from then until his death,

or for a period of ten days, if he lived that long. On the trial of the case the plaintiff adduced testimony tending to show that after he reached the bedside of Dr. Abbott and had talked with him to a considerable extent, he was about to return to his home when Dr. Abbott requested him to remain there in attendance, and it was agreed that he should receive $1,000 for his services. On the other hand, the testimony introduced by the defendant administrator tended to show that at that time Dr. Abbott was not mentally capable of transacting business. One of the attending physicians testified that Dr. Abbott was unconscious the most of the time during the week preceding his death, but that he had lucid intervals. One of the nurses testified that he had a high fever, and was irrational the most of the time, and that it was apparent from about 5 o'clock on the evening before his death that the end was very near. There was other evidence in the case and circumstances proved which warranted the conclusion that Dr. Abbott was not of sufficient mental capacity on the night before his death to enter into any business transaction. This being true, there was no express contract between the plaintiff and Dr. Abbott for compensation for the services of the former, and he could recover only the reasonable value of his services. In other words, the supreme court, after careful consideration, is of the opinion that there was evidence sufficient to warrant the finding that Dr. Abbott was not mentally capable of transacting business at the time he gave the check; with the legal result stated. The trial court found the value of the plaintiff's services to be $150, and allowed his claim to that extent; and he appealed from the judgment. As no appeal was prosecuted by the defendant administrator, the supreme court deems it unnecessary for it to pass on the question of the correctness of the ruling allowing $150, further than to say the evidence was sufficient to warrant the finding by the court that the value of the plaintiff's services did not exceed that amount. The supreme court denied a rehearing.

Right of Child to Damages for Prenatal Injuries

(Drobner v. Peters (N. Y.), 184 N. Y. Supp. 337)

The Supreme Court of New York, Special Term, New York County, in denying the defendant's motion for a judgment on the pleadings, says that the question was squarely raised as to whether a child, injured for life through the negligence of the defendant before it was born, may recover damages for the injuries thus received. The court's attention was not called to any similar case in which a recovery of damages had been had. The question of a child's right to recover for prenatal injuries was considered for the first and only time in the courts of the state of New York in *Nugent v. Brooklyn Heights R. R.*, 139 N. Y. Supp. 367. In that case the unborn child was injured through the negligence of the defendant, while the mother was a passenger alighting from a street car. Through its guardian appointed for the purpose, it sued for damages, and the appellate division of the second department held unanimously, affirming the court below, that damages could not be recovered in such a case. The court of appeals did not pass on the question. In the prevailing opinion it appears that the decision was based on the fact that, while the mother was a passenger, the child was not, inasmuch as the railroad company had no knowledge of the existence of the child, and hence never contracted for its safe carriage. But it would seem that the harsh rule there applied should not be extended, but rather confined strictly to the limits set in that case. Indeed, the opinion itself is a strong argument for the validity of a claim for damages to an unborn infant under other than the particular circumstances then under consideration. Here the mother fell into a coal hole on a public sidewalk. Surely the reasoning in the Nugent case does not apply, any more than if the mother was carrying her infant in her arms. It is our boast that the common law is elastic enough to fit itself to new conditions and to progress along with advancing civilization and our ever-growing humanitarianism; and it is but a manifestation of this spirit of the law to recognize the responsibility of the defendant to this child, doomed to go through life permanently injured in head, body and limbs.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, Boston, June 6-10.

American Association for Thoracic Surgery, Boston, June 6.
American Association of Anesthetists, Boston, June 6-8.
American Assn. of Genito-Urinary Surgeons, Richmond, Va., May 2-3.
American Association of Physicians, Atlantic City, May 10-11.
American Climatological and Clinical Association, Lenox, Mass., June 3-4.
American Dermatological Association, Swampscott, Mass., June 2-4.
American Gastro-Enterological Association, Boston, June 4.
American Gynecological Society, Swampscott, Mass., June 2-4.
American Laryngological Association, Atlantic City, May 30-June 1.
American Laryn., Rhinol. and Otol. Society, Atlantic City, June 3-4.
American Medico-Psychological Association, Boston, May 31-June 3.
American Neurological Association, Atlantic City, June 13-15.
American Ophthalmological Society, Swampscott, Mass., June 14-15.
American Orthopedic Association, Boston, June 2-6.
American Otological Society, Atlantic City, June 1-2.
American Pediatric Society, Swampscott, Mass., June 2-4.
American Proctologic Society, Boston, June 3-6.
American Radium Society, Boston, June 6-7.
American Society for Clinical Investigation, Atlantic City, May 9.
American Surgical Association, Toronto, Canada, June 14-16.
American Therapeutic Society, Washington, D. C., June 3-4.
American Urological Association, Montreal, June 2-4.
Arkansas Medical Society, Hot Springs, May 3-5.
Association for the Study of Internal Secretions, Boston, June 6.
Association of American Peroral Endoscopists, Atlantic City, June 1.
California, Medical Society of the State of, San Diego, May 10-12.
Conference of State and Provincial Health Authorities, Boston, June 3-4.
Connecticut State Medical Society, Hartford, May 18-19.
Florida Medical Association, Pensacola, May 10-11.
Georgia, Medical Association of, Rome, May 4.
Illinois State Medical Society, Springfield, May 17-19.
Interstate Association of Anesthetists, Niagara Falls, June 1-3.
Iowa State Medical Society, Des Moines, May 11-13.
Massachusetts Medical Society, Boston, May 31-June 1.
Michigan State Medical Society, Bay City, May 24-26.
Mississippi State Medical Association, Laurel, May 10-11.
Missouri State Medical Association, St. Joseph, May 24-26.
National Tuberculosis Association, New York, June 13-17.
Nebraska State Medical Association, Lincoln, May 9-12.
Nevada State Medical Association, Elko, June 24-25.
New Hampshire Medical Society, Concord, May 25-26.
New York, Medical Society of the State of, Brooklyn, May 3.
North Dakota State Medical Association, Fargo, May 26-27.
Ohio State Medical Association, Columbus, May 3-5.
Oklahoma State Medical Association, McAlester, May 17-19.
Radiological Society of North America, Boston, June 3-4.
Rhode Island Medical Society, Providence, June 2.
South Dakota State Medical Association, Aberdeen, May 24-26.
Texas, State Medical Association of, Dallas, May 10-12.
West Virginia State Medical Association, Charleston, May 24-26.

ASSOCIATION OF CARDIAC CLINICS, NEW YORK ACADEMY OF MEDICINE

Meeting held Jan. 26, 1921

Etiology of the Cardiovascular Affections

DR. JOSEPH H. BARACH, Pittsburgh: This paper appears in this issue, p. 1211.

Diagnosis of Chronic Valvular Disease

DR. PAUL D. WHITE, Boston: This paper appears in this issue, p. 1207.

DISCUSSION

DR. LEWIS A. CONNER, New York: The question whether one is justified in diagnosing organic mitral insufficiency on the presence of an apical murmur alone is still a debatable one. No matter how characteristic the murmur may seem to be in its location, quality and direction of transmission, it is unsafe to make such a diagnosis in the absence of other confirmatory evidence, such as cardiac enlargement or a distinct history of rheumatic fever. The value of an accentuation of the second pulmonic sound in the diagnosis of mitral disease is sometimes overestimated. In young individuals this sound is normally much louder than the corresponding aortic sound and is readily intensified by excitement or exercise, so that it is not easy always to say what is a pathologic accentuation. Any really significant accentuation is practically always associated with a distinct palpable shock corresponding in time and place with the intensified sound.

I should hardly agree that a murmur strictly presystolic in time is rare in mitral stenosis. While not the most frequent type, it seems to me that it is not uncommon, especially in the early and mild cases. When auricular fibrillation supervenes in mitral stenosis, the replacement of the presystolic, crescendo

murmur by one earlier in the diastole is not nearly so generally understood as it deserves to be. I am skeptical as to the existence of a presystolic thrill without the characteristic murmur. The accurate timing of thrills is, for me at least, muct more difficult than the timing of murmurs, and I believe that, especially with a rapid heart beat, it is often quite impossible to distinguish between a systolic and a presystolic thrill. I have seen very few cases of aortic insufficiency in which I felt convinced that the presystolic murmur at the apex was the Flint murmur of relative mitral stenosis. The great rarity of such presystolic murmurs in aortic leakage of syphilitic origin seems to support the view that a true Flint murmur is very uncommon.

The murmur of aortic insufficiency, when faint, is often heard more distinctly with the naked ear than with the stethoscope. As Cole pointed out many years ago, the diastolic murmur is sometimes heard more distinctly well to the left of the apex than at or within the apex.

It is perhaps well to point that in the syphilitic form of aortic insufficiency, associated as it usually is with a considerable degree of thickening of the arterial wall, the pulse often shows only indistinctly the waterhammer character which is so striking a feature of the rheumatic cases. Although "accidental" diastolic murmurs are exceedingly rare, I have seen three undoubted cases of diastolic cardiorespiratory murmur heard over a circumscribed area at the base of the heart and in each instance mistaken for the murmur of aortic insufficiency.

A word about the diagnosis of aortic stenosis: It is well to remember that when there is a high degree of decompensation, the characteristic rough, loud murmur may become very faint and the thrill may disappear, and that these characteristic signs may reappear if the heart regains some of its strength.

DR. ALEXANDER LAMBERT, New York: In listening to Dr. Barach's paper, one realizes that in the given histories of patients there is nothing to show that the origin of the cardiac disease has anything to do with the disease which is brought out prominently in the patient's history. Certainly, in a long hospital experience, typhoid fever has not produced cardiac complications in the proportion as here shown. It is interesting, however, to differentiate as a matter of record, how many patients had tonsillitis and how many gave articular rheumatism as the cause of the septic infection of early life. The same hospital experience forces one to divide the causes of cardiac disease into four main groups, that of sepsis or rheumatism, in which both the valves and muscles are involved and at times the pericardium. This is the main cause of cardiac disease in the early years of life, and the younger the child is, the more likely is it that the pericardium is involved or all three structures at once. It is also a noticeable fact that it is the left side of the heart that is predominantly involved. The aortic lesions are not nearly as common as the mitral. In cardiac disease beginning in middle life, we find the aortic valves predominantly involved; this is due almost invariably to syphilis. Syphilis also involves the myocardium in a characteristic manner. In the later years of life, after 50, the aortic lesions arising are most often due to the lesions coming under arteriosclerosis; and the most frequent murmur coming under the aortic arteriosclerotic group is the aortic systolic that is heard loudest over the aorta or, not infrequently, loudest over the apex and often heard with almost equal intensity at the aortic and apex region. It is very commonly called a mitral murmur, but has nothing to do with the mitral valve.

We have another type of cardiac disease as represented by the toxin in diphtheria, which affects both the conducting and contracting systems of the heart muscles and frequently is a cause of death. These are four types of cardiac involvement which, in the main, impress one clinically.

Dr. White was wise in designating the diseases of the mitral valve as mitral involvement, but it is well to remember that all acute conditions in the mitral valve produce regurgitation, and that mitral stenosis is the result of chronic scar tissue at that point, and does not occur in acute conditions. In differentiating in the early stages of mitral stenosis and when there is a slight diastolic thrill with a slapping first sound emphasizing the first sound and ending sharply with it, one must depend largely, as to whether or not stenosis exists, on the exaggeration of the second pulmonic sound. I do not think that the value of this second pulmonic sound is given sufficient attention, nor is it sufficiently appreciated. Often, besides the exaggeration of the second pulmonic, a reduplication of this sound occurs, and this is particularly characteristic under mitral stenosis. The later mitral diastolic murmur heard in what Mackenzie calls the second stage of the disease is, in my experience, best heard over the third left space, increasing in loudness downward and inward to the fourth left space near the sternum and outward to the apex in a crescent shaped line and changing near the apex from a mid-diastolic to a rolling late diastolic or presystolic murmur. Flint's functional presystolic murmur, in my mind, is best differentiated by the absence or exaggeration of the second pulmonic sound. This, I think, was also in Thayer's mind when he wrote his paper discussing the same murmur. I do not believe that, with any aortic regurgitant murmur, mitral stenosis can be accepted unless the second pulmonic sound is exaggerated or reduplicated. As to the proportion of the occurrence of the Flint murmur in aortic regurgitation, in my experience, it is not at all a frequent occurrence. How frequent, in figures, I cannot say, but I know that it is not common.

The murmur of aortic regurgitation produced by the stretching of the aortic ring, which has been specially emphasized by Anders, does exist but it is not a common occurrence.

I do not believe that the condition of aortic stenosis can be diagnosed by any murmur or thrill combined. Unless the pulse shows aortic stenosis, the diagnosis is not justified whether the murmur exists or not. It is usually a peculiarity of aortic stenosis that the murmur increases from the aortic area as one listens upward toward the neck.

As to the lesion of the tricuspid valve, Sansom's discussion and statistics have always interested me. He states that tricuspid murmurs are not heard above the third rib. In my experience, tricuspid stenosis has been very rare. I have made a diagnosis once, proved postmortem. I have seen postmortem examinations in which I failed to make it, but I have seen very few examples of this occurrence. The lesion of tricuspid regurgitation is not uncommon, and it can be easily differentiated. The murmur is heard near the tip of the sternum to the right or to the left, and differs in character and value of sound from the mitral regurgitation which frequently accompanies it. The enlarged and throbbing liver also justifies the belief in the existence of the regurgitation, even when one is doubtful as to the existence of the murmur.

As to the lesion of the pulmonary valve of infected origin, I have seen two hearts in which the pulmonary valves were buttonhole slits; but, unfortunately, I did not listen to the patients in life. I have seen two cases in which I believed there had been a pulmonary regurgitation of rheumatic origin in which I was not allowed to have a postmortem examination. I am skeptical about the frequency of the occurrence of pulmonic valve lesions.

DR. EMANUEL LIBMAN, New York: The studies made by Dr. Barach are of interest and value. Such studies could, of course, be expanded so as to include some of the other less commonly studied causes of myocardial insufficiency. I am accustomed to use the term myorcardial insufficiency (or myocardial disease) and to try to determine in each case the cause of the myocardial insufficiency. A definite myocarditis is one of the causes of myocardial insufficiency. Among the other subjects that could be taken up would be anemias, kyphoscoliosis, myoma of the uterus, adiposity, and special infections, particularly of the gallbladder.

The question of the relationship of disease of the thyroid gland to myocardial disturbances is a most interesting one. The disturbances due to so-called hyperthyroidism (with or without enlargement of the thyroid gland) are well known, as are also the phenomena due to large goiters lying in the usual situation, and not causing hyperthyroidism. The typical substernal goiter has also been investigated a great deal, although it is not often enough searched for as a cause of otherwise unexplained auricular fibrillation. Auricular fibrillation not infrequently occurs in connection with a goiter which may be of very small size (even as small as a walnut), which lies in a particular location, namely, behind the sterno-

clavicular joint. The more common location is on the right side. This goiter can, of course, extend above the joint and constitute a perfectly movable mass. What Dr. White has stated concerning auricular fibrillation in patients under the age of 40 holds true in most cases. But if a mitral stenosis or other cause cannot be found to explain an auricular fibrillation, it is important to slip the finger down behind both sternoclavicular joints, and not infrequently such a thyroid enlargement as I have described will be found. From a study of such cases one gets the impression that the cardiac disturbance is due in some way to pressure on nervous structures, because these patients may have few, if any, evidences of hyperthyroidism.

The subject of disease of the valves of the heart in connection with scarlet fever is not clear to me. There is, of course, no doubt that in scarlet fever an acute bacterial endocarditis, due to a secondary general infection, may occur. I have seen on two occasions hearts from patients who had scarlet fever in their previous history, and the mitral valve in these two instances showed peculiar changes which put them in a class by themselves. The free margins of the valves were thickened and rather translucent, and beyond this, there was a peculiar whitish thickening. The physical signs in the two cases were the same, there being a very sharp first sound followed by a systolic murmur. It is difficult to describe just in what way these physical signs differ from those one gets in other cases of mitral disease, but I was able, from the physical signs, to suspect the condition in the second case. On taking the history we found that the patient had had an attack of scarlet fever about eight years before. At the postmortem examination the valve showed exactly the same condition as that which was present in the first case.

The points brought out by Dr. Lambert concerdning the location of the murmurs and abdominal sounds in cases of mitral stenosis is worthy of emphasis, and should be more widely taught in medical schools. The sharp first sound in mitral stenosis is generally best heard at the apex, the presystolic murmur at the apex or somewhat to the inner side of it, and the third sound just to the left of the sternum. The combination heard at the left border of the sternum, in a number of cases of mitral stenosis, of a sharp first sound followed by a second sound and then a third sound (and perhaps also a diastolic murmur) is most important for the diagnosis of mitral stenosis. Such a finding is often made when there are slight murmurs or none to be heard at the apex.

The question of tricuspid lesions is one of great interest. Insufficiency of the tricuspid valve due to mitral disease is, of course, very common, but organic lesions of the valve are not as infrequent as is generally believed. The reason that an organic lesion is somewhat overlooked is that the organic lesion of the tricuspid valve does not always involve the entire circumference of the valve.

Besides jaundice and polycythemia, which have been referred to, there are other clinical phenomena. Tenderness of the lower sternum occurs in cases of tricuspid disease. The diagnosis is sometimes difficult between a subacute streptococcus endocarditis in the bacteria-free stage and a tricuspid lesion. In both conditions the sternum is tender, and there is a peculiar color of the face. The peculiar color of the face which is found in cases of tricuspid disease is often by error called the mitral facies. The patients develop the familiar olive brownish or olive tan. In the cases of endocarditis in the bacteria-free stage, the color is more of a real brown. It is, of course, difficult to make this point clear without a presentation of patients. In cases of tricuspid disease, there is often present a peculiar odor of the breath, which occurs in a variety of hepatic diseases.

The point which Dr. White brought out, basing his statement on the experience of Dr. Levine, is one that is quite useful clinically. In cases of valvular disease in which the liver is enlarged, and particularly if it is hard, without marked general evidences of cardiac insufficiency, one must be suspicious of a lesion of the tricuspid valve. The open ductus arteriosus, instead of giving both a systolic and diastolic murmur to the left of the sternum, may give only a systolic murmur. Occasionally, after observing a case for a long time in which only a systolic murmur is present, a diastolic murmur may develop.

Pulmonary regurgitation due to mitral stenosis must be a very rare condition. I have not encountered a definite case. The murmur produced by pulmonary stenosis at the valve is usually heard at the left of the sternum. In pulmonary stenoses behind the conus (growths, adhesions) the systolic murmur is heard to the right of the sternum.

I have seen two definite cases of functional aortic insufficiency. Both cases were proved to be such by the postmortem examination. The first case was one of chronic nephritis (contracted kidney) in a young boy. There was present a marked enlargement of the heart in all directions, and there was heard a loud systolic and diastolic murmur over the entire cardiac area. On rest in bed, the diastolic murmur first disappeared, the heart became smaller, and then the systolic murmur completely disappeared. At the postmortem examination an aortic insufficiency was not present. The other case was one of the type described by von Leube, a functional aortic insufficiency in a case of pernicious anemia.

Stenosis of the isthmus of the aorta may give physical signs which are mistaken for mitral insufficiency. I am not referring now to cases of real so-called coarctation of the aorta, but to cases of more moderate degree. These are not at all rare, especially in children. The physical signs that are present are hypertrophy of the left ventricle, a soft systolic murmur at the apex that may be transmitted for a shorter or a longer distance to the left, a second accentuated aortic sound, and a palpable pulsation in the jugular notch. The diagnosis is generally not simple.

The murmur of aortic stenosis is heard most frequently over the sternum at the level of the third rib. It may also be heard in the second interspace to the right of the sternum or to the left of the sternum. There are cases in which it is heard only at the apex. It may be entirely absent, especially when, as pointed out by one of the previous speakers, the heart becomes enfeebled. While the apex usually partakes to a certain extent of the characteristics of the apex beat as found in cases of aortic insufficiency, the thrust is likely to be a slower one. The bisferiens pulse has already been mentioned. A point that I employ and which is of importance, I believe, in establishing the diagnosis of a real aortic stenosis is the absence of pulsation in the jugular notch. (Of course, examinations of pulsations of the jugular notch are of value only if the apex beat is neither above nor below its normal situation). It is an interesting fact that if one examines the aorta of a patient dying of aortic stenosis, even in a patient between 50 and 60, one usually finds the aorta thin and free from any changes. In other words, in a real stenosis the aorta is never distended as fully as normally.

It is important in examining patients for the presence of aortic insufficiency to listen for the diastolic murmur as far down as to the left of the upper end of the ensiform process. This is particularly important in the examination of atonic women.

The Equivalent of Ordinary Exertion

DR. MAY G. WILSON, New York: This paper appears in this issue, p. 1213.

DISCUSSION

DR. THEODORE B. BARRINGER, M.D., New York: It is interesting and significant that a paper with the title "The Equivalent of Ordinary Exertion" should be read at this meeting. It shows the increasing importance which physicians are attaching to functional heart diagnosis. We are not content to learn only the kind of valve lesion, the type of arrythmia; the size of the heart—we want to know something about the way in which the heart functions—in other words, something about the heart's reserve power. The way in which the patient tolerates exercise gives us a very correct idea of the cardiac reserve power. Dr. Wilson has performed a signal service in formulating these standards of the tolerance normal children show for stair-climbing and dumb-bell swinging. To make this standard valid requires a great number of painstaking observations, and the technic employed must be beyond criticism. I am familiar enough with Dr. Wilson's work to vouch for all these essential points. Either of the tests described, stair-climbing or dumb-bell swinging, is well adapted to give us a standard test exercise in cardiac clinics. I have used them both for a number of years, and found them most satisfactory.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

March, 1921, **28**, No. 3

Effect of Potassium Permanganate on Mesenchyme Cells of Tissue Cultures. W. H. Lewis, Baltimore.—p. 431.
Development of Connective Tissue in Amphibia. G. A. Baitsell, New Haven, Conn.—p. 447.

American Journal of Diseases of Children, Chicago

April, 1921, **21**, No. 4

*Malt Soup Extract as Antiscorbutic. H. J. Gerstenberger, Cleveland.—p. 315.
*Aneurysms of Thoracic Aorta in Children. Report of Two Cases. J. K. Calvin, Chicago.—p. 328.
*Congenital Malformations of Esophagus. Report of Two Cases. R. P. Reynolds and W. W. Morrison, New York.—p. 339.
Use of Supports in Obscure Abdominal Conditions. L. T. Brown and F. B. Talbot, Boston.—p. 347.
Keratosis Diffusa Fetalis (Ichthyosis Congenita). J. H. Hess and O. T. Schultz, Chicago.—p. 357.
Studies of the Inorganic Constituents of Milk. W. R. Sisson and W. Denis, Boston.—p. 389.
*Infantile Scurvy Following Use of Raw Certified Milk. H. K. Faber, San Francisco.—p. 401.
*Indicanuria in New-Born. B. E. Bonar, Chicago.—p. 406.
*Postoperative Recurrence of Intussusception. M. Cohen, New York.—p. 410.

Malt Soup Extract as Antiscorbutic.—A report is made by Gerstenberger of a rapid and marked cure, such as is experienced with orange juice, of three cases of severe infantile scurvy by the administration of 100 gm. malt soup extract. In two of these the malt soup extract was given in the form of Keller's soup, in the third, in conjection with S. M. A. The explanation offered for the presence of the antiscorbutic property in this lot of malt soup extract is that it was, in all probability made from barley of the proper age and state of germination or from a lot of barley possessing an unusually high amount of potential antiscorbutic material. The suggestion is made that all malt soup extract could be manufactured from barley of an age and state of germination that would insure its large and adequate content of the antiscorbutic factor, and that in this manner another antiscorbutic of value also in other respects to infants and children, could be added to the list of regular and dependable antiscorbutics.

Aneurysms of Thoracic Aorta.—Calvin has collected thirty-one cases from the literature and adds two cases due to acute infectious aortitis. In one case definite history of five severe attacks of chorea was given. During the third attack the heart was involved. This attack was followed by diphtheria. During the fifth attack the aneurysm was diagnosed five years after the initial chorea. The second patient developed symptoms of "heart trouble" after an operation for appendicitis, with a postoperative pneumonia, which in turn was followed by arthritis.

Congenital Malformations of Esophagus.—In one of the cases cited by Reynolds and Morrison, the esophagus was patent as far as the level of the fourth dorsal vertebra, where it ended blindly in a dilated pouch. This pouch was situated just at the bifurcation of the trachea, and just above the arch of the aorta. From this point on, the esophagus was represented as a fibrous band, to within about 1 inch of the stomach, where it again became a patent tube to empty into the stomach. In the second case, a congenital obliteration of the esophagus was found below a point opposite the second dorsal vertebra. At this point there appeared to be a connection between the esophagus and trachea.

Infantile Scurvy on Raw Milk Diet.—Faber cites the case of an infant aged 10 months fed almost from birth on modified raw certified milk, to which small amounts of sodium citrate were added, who developed scurvy at the aged of 6 months. It is possible but not proved, that sodium citrate may have partly destroyed the antiscorbutic vitamin.

Indicanuria in New-Born.—Indicanuria in the new-born occurred in twenty-eight, or 8.2 per cent., of 338 examinations made by Bonar and in twenty cases of fifty examined. In all probability the condition may be considered physiologic, as it could not be associated with any pathologic findings clinically.

Postoperative Recurrences of Intussusception.—Four cases of postoperative recurrences of intussusception at intervals of ten months, thirty hours, four months and fourteen months, respectively, are reported by Cohen. Seventeen other cases are recorded in the literature.

American Journal of Ophthalmology, Chicago

March, 1921, **4**, No. 3

Proliferating Chorioretinitis. M. Danis, Brussels, Belgium.—p. 153.
Microscopic Findings in Asteroid Hyalitis. F. H. Verhoeff, Boston.—p. 155.
Mooren's Ulcer of Cornea. M. Feingold, New Orleans.—p. 161.
Microscopy of Living Eye with Slit Lamp of Gullstrand. R. Von Der Heydt, Chicago.—p. 171.
Study of Onchocercosis. R. Pacheco-Luna, Guatemala, C. A.—p. 175.
Spasm of Retinal Arteries. W. H. Crisp, Denver.—p. 188.
Significance of Syphilis as Etiologic Factor in Acute Iritis. C. A. Clapp, Baltimore.—p. 194.
Disorders of Lacrimal Drainage. H. D. Lamb, St. Louis.—p. 197.
Diagnosis of Trachoma Granules on Limbus of Cornea. K. Hiwatari, Kagoshima, Japan.—p. 200.
Posterior Sclerotome. A. G. Bennett, Buffalo.—p. 202.
Anomalous Spiral Looping of Retinal Artery. L. M. Francis, Buffalo.—p. 202.
Pulsating Exophthalmos. D. Hallett, New York.—p. 203.
Amaurotic Family Idiocy. J. A. Kearney, New York.—p. 203.

American Journal of Tropical Medicine, Baltimore

January, 1921, **1**, No. 1

Medical Notes on Dominican Republic and Haiti. J. M. Swan.—p. 19.
Attempt to Explain Greater Pathogenicity of Plasmodium Falciparum as Compared with Other Species. C. C. Bass, New Orleans.—p. 29.
Natural Malaria Infection in Anopheles Mosquitoes. W. V. King.—p. 35.
Prevalence of Carriers of Endameba Dysenteriae Among Soldiers Returned from Overseas Service. C. A. Kofoid and O. Swezy, Berkeley, Calif.—p. 41.
*Yaws, Contracted by American Soldier in France. J. F. Schamberg and J. V. Klauder.—p. 49.
*Case of Bacillary Dysentery with Diphtheritic Membrane in Vagina and Edema of Abdominal Wall. I. I. Lemann, New Orleans.—p. 53.

Yaws in France.—The lesions in the case reported by Schamberg and Klauder in general were distinctly fungated and granulomatous in appearance, sharply circumscribed, varying in size from a large pea to a nut. They were present on the scalp, soles of the feet, palms of the hands and the palmar aspects of the fingers, and on the prepuce. A dark field examination of the serum obtained from the surface of some of the lesions disclosed many trephonemas having the morphologic characteristics of *Spirochaeta pallida*. A Wassermann performed with cholesterolized, alcoholic syphilitic liver and acetone insoluble lipoid antigens was 4 plus. Neo-arsphenamin, 0.9 gm., caused a disappearance of many of the lesions and a marked improvement in others. Sixteen days later, a second dose was given which caused a complete disappearance of the remaining lesions. Since the administration of neo-arsphenamin, weekly Wassermann reactions have been positive. The last degree of positive reaction obtained has been 3 plus with a cholesterolized antigen; 2 plus with an alcoholic syphilitic liver antigen and 2 plus with an acetone insoluble lipoid antigen. One of the skin lesions was excised and was used to inoculate four rabbits intratesticularly. In two rabbits, positive results were obtained after an incubation period of thirty-four days. A second strain has been grown in rabbits, six out of eight being successful; average period of incubation, twenty-four days. Ten cubic centimeters of the patient's citrated blood was injected intravenously into rabbits with negative results. Attempts to inoculate the anterior chamber of the eye in rabbits were negative. Attempts to inoculate a monkey's eyebrow have been unsuccessful so far. Complement fixation tests were performed with an antigen made from a yaws nodule from an infected rabbit's testicle. Salt solution was used in making the antigen rather than alcohol. The reaction with the serum of the yaws patient yielded slight but definite degree of complement fixation. A duplicate test performed with the pooled serum of three syphilitics whose Wassermann reaction was 4 plus, yielded negative reactions. Further immunologic study of the yaws lesion showed the following: hyperkeratosis of the acanthosia of the epidermal tissues; extensive lymphoid and polymorphonuclear infiltration of corium. Absence of blood vessel

changes. Spirochetes in the leukocytic areas of the apices of the papillae, subjacent to the rete. The difficulty in staining the spirochetes is suggestive of its being pertenuis rather than pallida.

Bacillary Dysentery with Diphtheritic Membrane in Vagina.—The croupous pseudomembrane in the vagina in Lemann's case corresponded exactly with the membrane universally described as occurring in the bowel of dysentery patients; in other words the bacilli seem to act on the vaginal mucous membrane as they do on the intestinal. Undoubtedly, contamination was directly from the rectal discharges by proximity, especially as the inflammatory process was most extensive and intense at the introitus and seemed to be ascending. Or the infection may have been by contiguity within the pelvis. Another theory may be suggested, namely, that the infection was carried to the vagina by the blood stream.

Archives of Dermatology and Syphilology, Chicago

April, 1921, **3**, No. 4, Part 1

*Biologic Study of Latency in Syphilis. XXI. M. F. Engman and F. Eberson, St. Louis.—p. 347.
Syphilis of Intestine. U. J. Wile, Ann Arbor, Mich.—p. 372.
*Creeping Eruption (Larva Migrans). Report of Case Contracted at Wildwood, N. J. J. V. Klauder and S. S. Greenbaum, Philadelphia. —p. 377.
Pathology of Rhus Dermatitis. J. B. McNair, Washington, D. C. p. 383.
*Dermatologic Etymology. G. H. Fox, New York.—p. 404.
*Picric Acid in Treatment of Severe Epidermophyton Infection. XXII. R. S. Weiss, St. Louis.—p. 413.
*Comparison of Wassermann and Sachs-Georgi Reactions in Serologic Diagnosis of Syphilis. R. A. Kilduffe, Pittsburgh.—p. 415.

Latency in Syphilis.—In the study made by Engman and Eberson *Spirochaeta pallida* has been isolated in five instances from latent syphilitic patients—three times from inguinal glands (two females and one male) and twice from the semen. The stains produced typical syphilitic lesions in rabbits' testicles and could be recovered and propagated for an indefinite number of generations. *Spirochaeta pallida* was isolated from patients who gave a history of syphilis dating back eleven and thirteen years in two instances and one year in three instances. An inguinal gland and the semen proved positive for spirochetes in the two first cases mentioned and the glands and semen in the last named. In this series of positive results, a gland was found to be infectious in the case of a man whose Wassermann reaction had been negative, following treatment, and at the time of taking a specimen for the experiment gave 2 plus reaction in the cholesterin antigen only. A second instance of this nature was found in the case of a specimen of semen which proved positive for *Spirochaeta pallida*. It appears from this investigation and from that of others that the blood and other body fluids, excepting semen, are not infectious in latent syphilis, or if so, rarely. Incubation of blood from latent syphilitic patients did not favor any infectious property which might have existed. One third of the total number of spinal fluids from latent syphilitic patients gave evidence of lymphocytosis, and one gave a positive Wassermann reaction. The groups studied were composed of untreated patients, as well as of those who had received no treatment within the last two years. Between the time of taking specimens for inoculations of rabbits and the first symptoms or a suggestive history of syphilis in these patients, from one to forty years had elapsed. Of a total of 500 cases of syphilis, seventy-five, or 15 per cent., were definitely latent. These investigations demonstrate the fact that those who give a history of a syphilitic infection may harbor active virulent *Spirocheata pallida* for years, and this in the face of irregular negative Wassermann reactions or slight reaction in the cholesterin antigen only.

Creeping Eruption.—In the case reported by Klauder and Green baum the disease was entirely cured in about five days after the daily applicaton of tincture of iodin to the entire length of the burrow.

Dermatologic Etymology.—Fox presents a glossary of about 150 terms employed in dermatology as selected from a textbook.

Picric Acid Treatment of Epidermophyton Infection.—Weiss strongly recommends the application of a saturated solution of picric acid in water in the treatment of this disease but cautions that it be not used for more than a week at the longest because of the danger of poisoning.

Comparison of Wassermann and Sachs-Georgi Tests.—The results of 296 parallel Wassermann and Sachs-Georgi reactions are reported by Kilduffe. They indicated that the Sachs-Georgi reaction is not as delicate or as trustworthy as the Wassermann reaction in the serodiagnosis of syphilis. It may be positive with Wassermann negative serums and negative with Wassermann positive serums. The number of nonspecific reactions is sufficiently high to render the test unreliable as a means of diagnosis.

April, 1921, **3**, No. 4, Part 2

*Histologic Changes Produced Experimentally in Rabbits. I. Arsphenamin. J. A. Kolmer and B. Lucke, Philadelphia.—p. 483.
*Id. II. Neo-Arsphenamin. J. A. Kolmer and B. Lucke, Philadelphia. p. 515.
*Id. III. Mercurial Compounds. J. A. Kolmer and B. Lucke, Philadelphia.—p. 531.
*Clinical Commentary on Studies of Histologic Changes in Organs Induced by Arsphenamin, by Neo-Arsphenamin and by Mercury. J. F. Schamberg, Philadelphia.—p. 571.

Histologic Changes Produced by Arsphenamin.—The intravenous injection of lethal doses of acid nonneutralized solutions of arsphenamin in experimental animals produces widespread and severe vascular injury characterized by congestion, thrombus formation and hemorrhage; later cellular degeneration and necrosis take place. The intravenous injection of single large doses of solutions of disodium arsphenamin (ten times larger than the maximum amount administered to human beings at one time) produce severe vascular and tissue alterations, particularly in the liver, kidney, suprarenals and spleen. The intravenous injections of multiple therapeutic doses of solutions of disodium arsphenamin corresponding to doses of 0.6 gm. per 60 kilograms of body weight, produce inconspicuous tissue alterations that do not appear to be sufficiently pronounced to interfere with the functions of the organs. Detailed descriptions of the histologic changes found in the brain and meninges, heart, lungs, liver, kidneys, suprarenals and spleen are given.

Histologic Changes Produced by Neo-Arsphenamin.—The intravenous injection of single massive and multiple smaller doses of neo-arsphenamin into rats and rabbits produces vascular injury, cellular degenerations and necrosis similar to those produced by solutions of disodium arsphenamin. The histologic changes found in the cerebrum, cerebellum, brain stem, meninges, heart, lungs, liver, kidneys, suprarenals and spleen are described. The tissue changes produced by neo-arsphenamin are less severe than those produced by solutions of disodium arsphenamin when considered in relation to dosage per kilogram of body weight. The changes described were produced in equal degree and with equal frequency by neo-arsphenamin prepared by different laboratories.

Histologic Changes Produced by Mercury.—The administration to rabbits of different soluble and insoluble mercurial compounds commonly employed in the treatment of syphilis, by intramuscular and intravenous injection, inunction and oral administration, and in amounts analogous to the maximum doses given to human beings, resulted in the production of tissue changes in all organs examined, namely, the brain, heart, lungs, spleen, liver and kidneys. The most conspicuous changes were found in the brain in the nature of perivascular round cell infiltrations, and in the kidneys, as tubular and capsular glomerulonephroses of varying degrees of severity. The degree of tissue injury caused by the different preparations of mercury appears to bear a direct relation to the actual amounts of pure mercury absorbed, irrespective of the kind of preparation and route of administration.

Arsenic and Mercury Compounds in Syphilis.—Schamberg expresses the opinion that vigorous mercurial treatment is often responsible for arsenical intoxication when arsphenamin and mercury are used at the same time. Large doses of both ought not to be employed synchronously. When the two are used jointly their respective dosages should be inversely proportional to each other. It would appear best to give the courses of mercury subsequent to that of arsenic.

Boston Medical and Surgical Journal

March 31, 1921, **184**, No. 13

Rat in Health and Economics. A. T. Leatherbee, Boston.—p. 319.
Modifications of Technic in Gallbladder Surgery. G. F. Martin, Lowell.—p. 325.
Energy Requirements of Girls from 12 to 17 Years of Age. F. G. Benedict and M. F. Hendry, Boston.—p. 329.
Bornhardt's Formula. H. Gray, Boston, and F. B. Allen, North Wales, Pa.—p. 334.

April 7, 1921, **184**, No. 14

Ancient Empiricism vs. Modern Evidence. J. B. Deaver, Philadelphia. —p. 345.
*Basal Metabolism as Index of Treatment in Diseases of Thyroid. F. H. Lahey and S. M. Jordan, Boston.—p. 348.

Value of Basal Metabolism Studies in Thyroid Disease.—From an experience in metabolism studies in connection with thyroid disease, involving 304 metabolism estimations on 135 patients Lahey and Jordan conclude that active hyperthyroidism probably does not exist without an increase in the metabolic rate. Such study is of great value in separating those cases of neurasthenia and associated neurologic and cardiac lesions, such as effort syndrome, which often present signs closely simulating those of hyperthyroidism, in that these conditions show metabolism estimations within normal limits. It is of value, further, in determining the presence of secondary hyperthyroidism in those cases of adenoma of the thyroid in which the symptoms of hyperthyroidism are not markedly evident. Even slight degrees of secondary hyperthyroidism are demonstrable by increases in the rate of metabolic activity. Metabolism estimation, correlated with the clinical examination, is also of marked value in indicating the ability of a patient to withstand surgical procedures of various magnitudes; for example, in deciding whether the ligation of a single thyroid pole should be employed, whether it would be wise to ligate both thyroid poles, or whether it would be safe to employ partial thyroidectomy as a primary procedure. It is of further value in deciding when to follow the preliminary pole ligation with the partial thyroidectomy. Up to recently it has been the authors' custom to ligate the superior thyroid poles and then send the patient home for eight weeks, at the end of which time the patient returned to the hospital for the complete operation. As the result of their metabolism investigations, they have been finding that in some cases, by waiting eight weeks, they have passed the period of maximum improvement, as indicated by a rise in the metabolism rate from the rate representing the maximum drop after pole ligation. They have, therefore, come to the conclusion that during the intervals between pole ligation and partial thyroidectomy, metabolism estimations should be made every two weeks, and partial thyroidectomy employed as soon as the maximum gain indicated by a drop in metabolism and pulse is made. Partial thyroidectomy may be employed as a primary measure, unpreceded by ligations, in most cases showing increases in metabolic rates of not over + 35 In all such cases, however, careful consideration must be given to the apparent degree of toxicity of the disease, as evidenced by the clinical signs, and this consideration must not be biased by the degree of increase in basal metabolic rate, however moderate it may be. Careful consideration must also be given resulting or associated lesions, such as myocarditis and renal lesions. Most patients showing basal metabolic rates above + 50 are safest when submitted to primary ligation of one or both of the superior thyroid poles. In patients showing metabolic rates of from + 75 up, extreme caution must be exercised in the extent of the surgical treatment given.

April 14, 1921, **184**, No. 15

Fecal Units and Intestinal Rate, Basis for Study of Health and Intestinal Indigestion. F. L. Burnett, Boston.—p. 371.
*Acute Inversion of Uterus. J. L. Huntington, Boston.—p. 376.
Case of Traumatic Myositis Ossificans Developing from Torn Coracoclavicular Ligament Without Other Bony Fracture. H. W. Marshall, Boston.—p. 380.
Case of Tubercular Mesenteric Glands. J. M. Lynch, Boston.—p. 384.
*Aneurysm of Splenic Artery, Rupturing Simultaneously with Paracentesis Abdominis. J. Garland, Boston.—p. 385.
Case of Congenital Cystic Kidneys and Other Congenital Anomalies. L. W. Smith, Boston.—p. 386.

Acute Inversion of Uterus.—In a case cited by Huntington labor was terminated by easy, low forceps. Fifteen minutes later, gentle pressure on the fundus revealed the placenta at the introitus. Pressure given at the sides of the fundus with extreme care and the placenta was easily delivered. There was moderate bleeding after the birth of the placenta, and ergot and pituitary extract were given subcutaneously. Bleeding continued and ergot was repeated. Bleeding seemed to be increasing, and while preparations were being made for a transfusion, Huntington decided to pack the uterus. On introducing his hand into the vagina, a smooth mass was found projecting through the cervix, the cervix hugging it tightly like a collar. The entire body of the uterus seemed to be in the vagina. More careful examination revealed a roughened area over the fundus, evidently the placental site. On an attempt being made to replace the fundus by pressure from below, blood poured from the vagina. Immediate, laparotomy was decided on, without further attempts at reduction from below. Bit by bit the uterus was drawn back through the ring. It appeared firm, but rather pale, but the color returned rapidly, and no attempt was made to fix it. The patient made an absolutely uninterrupted convalescence. In another case of normal primiparous labor, lasting nine hours, the patient had slight postpartum hemorrhage. A small piece of placenta was removed. The patient went into shock, although there was not enough hemorrhage to account for it. A diagnosis of inversion of the uterus was made. Under ether, an attempt was made to replace the body of the uterus. This was unsuccessful; the patient went into extreme shock. Another attempt was also unsuccessful. Laparotomy was decided on. The uterus was completely inverted, the tubes being drawn in with the fundus. An attempt to stretch the ring above and push the fundus up from below, failed. The posterior vaginal wall was finally split; the uterus was pushed up, and a hysterectomy performed, a small portion of the cervix being left in situ. The patient recovered from shock of operation, but died sixteen days later of sepsis and exhaustion.

Aneurysm of Splenic Artery.—In over 4,100 necropsies at the Massachusetts General Hospital, aneurysm of the splenic artery has been found three times. Garland has found seventeen cases mentioned in the literature, the most recent of which, reported by Hogler, is said to have been diagnosticated during life. Garland's patient complained of dyspnea on exertion and edema. The abdomen was distended and tympanitic, with a definite fluid wave and shifting dullness. The temperature varied from 98 to 103 F. Finally, abdominal paracentesis was performed, the trochar being inserted in the midline about midway between the umbilcus and the symphysis pubis. After 1,200 c.c. of slightly cloudy, reddish fluid had been withdrawn, the flow stopped. As there still seemed to be fluid in the abdomen, the tap was repeated, the trochar being inserted one-half inch lower. Immediately the patient experienced a sharp pain in the abdomen, and the needle was withdrawn. Slight bleeding from the puncture wound followed, and the patient became pale and showed signs of collapse, with a weak and thready pulse and cold extremities. Death occurred three hours later. The necropsy disclosed a ruptured aneurysm of the splenic artery not due to trauma, however.

Illinois Medical Journal, Oak Park

April, 1921, **39**, No. 4

Compulsory Health Insurance and Allied Dangers. J. J. A. O'Reilly, S. C. Henry and D. M. Gallie.—p. 293.
Etiology of Pulmonary Tuberculosis. R. S. Berghoff, Chicago.—p. 310.
Symptoms and Diagnosis of Nasal Accessory Sinus Disease with Special Reference to Their Complications. W. D. Black, St. Louis.—p. 313.
Present Tendencies in Federal Public Health Legislation. F. R. Green, Chicago.—p. 317.
Nonsurgical Drainage of Biliary Tract. Its Usefulness as Diagnostic and Therapeutic Agent. F. Smithies, Chicago.—p. 325.
*Case of Cardiospasm with Enormous Dilatation of Esophagus. T. J. Snodgrass, Janesville, Wis.—p. 339.
Standardization of Methods of Treatment in Orthopedic Surgery and in Industrial Surgery of Extremities and Spinal Column. R. B. Osgood, Boston.—p. 342.
Treatment of Inoperable Parovarian Cyst Adenoma by Laparotomy and Radium. R. L. Markley, Rockford.—p. 353.
Defects in Present Method of Attempts to Control Venereal Diseases; Suggestions. A. E. Mowry, Chicago.—p. 354.

Cardiospasm with Enormous Dilation of Esophagus.—Snodgrass reports the case of a man, aged 66, who gave a history of having had trouble in swallowing since he was 14. He said that food would stay in his esophagus several hours and then he would have to spit it out. This continued with-

out treatment for forty years. Seven years ago, he had influenza from that time he grew steadily worse in regard to his swallowing. It required enormous pressure to force food into the stomach. He found that he could eat practically a whole meal before swallowing it. It would then be necessary for him to leave the table, throw his arms back, grasp something firmly, take a drink of water, throw his head back and thus, with enormous pressure, force the food into his stomach. It would shoot in with a very audible whistling sound. The esophagus, however, was never entirely emptied and every morning he would throw out a large amount of food that had been taken the night before. The patient's appetite was good; he belched practically not at all, but was continually troubled with a large amount of gas which passed out through the bowel. He had no particular distress after eating; he never vomited, but simply regurgitated the food out of the esophagus, which he was unable to swallow. His bowels were regular; he had a slight brassy cough; no pain; was somewhat nervous and ill nourished. His general physical condition was fair for a man of his age. On giving him a bismuth meal it was found that the esophagus was enormously dilated, was narrowed down to a small stricture in the region of the cardia about 1½ inches long and one-eighth inch wide. By means of gradual dilation of the stricture the esophagus regained its tone somewhat. Several months after treatment examination under the fluoroscope showed still some delay in the food passing from the esophagus into the stomach. He was able to swallow food with very little difficulty, his weight increased, he never regurgitated food, he belched freely, and was thereby relieved of the distressing bowel symptoms.

Journal of Comparative Psychology, Baltimore

February, 1921, **1**, No. 1

Integration of Movements in Learning in Albino Rat. Study of Adjustment of an Organism to an Environment. J. L. Ulrich.—p. 1.
Psychological Effects of Oxygen Deprivation. E. Bagby.—p. 97.

Journal of Biological Chemistry, Baltimore

March, 1921, **46**, No. 1

Detection of Volatile Alkylamines in Presence of Ammonia and of Volatile Tertiary Alkylamines in Presence of Volatile Primary and Secondary Alkylamines. H. E. Woodward and C. L. Alsberg, Washington, D. C.—p. 1.
Studies on Digestibility of Proteins in Vitro. I. Effect of Cooking on Digestibility of Phaseolin. H. C. Waterman and C. O. Johns, Washington, D. C.—p. 9.
Ribohexosaminic Acids. P. A. Levene and E. P. Clark, New York.—p. 19.
*Biochemistry of Iodin. IV. Effect of Thyroxin on Growth in White Rats and in Rabbits. A. T. Cameron and J. Carmichael, Winnipeg, Can.—p. 35.
Comparative Results with Scales' Method and Devarda's Alloy for Reducing Nitric Nitrogen. A. P. Harrison, Washington, D. C.—p. 53.
Alkali Reserve of Blood of Certain of Lower Vertebrates. J. B. Collip, Edmonton, Can.—p. 57.
*Acid-Base Exchange Between Plasma and Red Blood Cells. J. B. Collip, Edmonton, Can.—p. 61.
Synthesis of Hippuric Acid in Animal Organism. IV. After Exclusion of Bile from Intestine. H. B. Lewis, Philadelphia.—p. 73.
Nutritional Requirements of Yeast. III. Synthesis of Water-Soluble B by Yeast. V. E. Nelson, E. I. Fulmer and R. Cessna, Ames, Ia.—p. 77.
*Available Carbohydrate in Thrice Boiled Vegetables. L. O'Reilly and E. H. McCabe, Montreal, Can.—p. 83.
*Factors Governing Excretion Rate of Urea. J. H. Austin, E. Stillman and D. D. Van Slyke, New York.—p. 91.
Vitamins and Yeast Growth. R. J. Williams, Eugene, Ore.—p. 113.
Use of Edestin in Determining Proteolytic Activity of Pepsin. J. F. Brewster, Washington, D. C.—p. 119.
Acidity of Goat's Milk in Terms of Hydrogen-ion Concentration, with Comparisons to that of Cow's and Human Milk. E. W. Schultz and L. R. Chandler, San Francisco.—p. 129.
Size of Fat Gluobules in Goat's Milk. E. W. Schultz and L. R. Chandler, San Francisco.—p. 133.
Chemical Nature of Tissue Coagulins. C. A. Mills, Cincinnati.—p. 135.
Action of Tissue Extracts in Coagulation of Blood. C. A. Mills, Cincinnati.—p. 167.
Fatty Acids of Lecithin of Egg Yolk. P. A. Levene and I. P. Rolf, New York.—p. 193.
*Chemistry of Neo-arsphenamin and Its Relation to Toxicity. G. W. Raiziss and M. Falkov, Philadelphia.—p. 209.
*Certain Chemical Changes in Blood After Pyloric Obstruction in Dogs. A. B. Hastings, C. D. Murray and H. A. Murray, Jr., New York.—p. 223.
*Parathyroidectomized Dogs. A. B. Hastings and H. A. Murray, Jr., New York.—p. 233.
*Variation and Statistical Constants of Basal Metabolism in Men. J. A. Harris and F. G. Benedict, Washington, D. C.—p. 257.

Effect of Thyroxin on Growth.—Using decrease of growth rate in growing rats, hypertrophy of heart, liver, kidneys and suprarenals, and decrease of growth rate of thyroid as tests, thyroxin, when administered by mouth, produces the same qualitative effects as does desiccated thyroid. Quantitatively, when compared on a basis of iodin content, the effects of thyroxin are distinctly less. This is probably due to bacterial decomposition; thyroid acts as a shield. The hypertrophy of heart lymphatic tissue resembles that observed in cases of hyperthyroidism.

Acid-Base Exchange Between Plasma and Blood Cells.—Confirmatory evidence is given by Collip of the acid-base transfer between the red cells and the plasma of the serum of vertebrate blood with fluctuating carbon dioxid tension. The solution of the ash of serum or of whole blood has a greater carbon dioxid combining power than the original serum or whole blood. This fact indicates that part of the alkali of the blood is bound by an organic substance (probably with protein for the most part) which functions as a weak acid. The hypothesis that sodium bicarbonate rather than carbon dioxid combinations with proteins is the transporting vehicle for carbon dioxid in the body is supported.

Carbohydrates in Boiled Vegetables.—Only in the case of a few thrice boiled vegetables were O'Reilly and McCabe able to free them completely from available carbohydrate as determined by takadiastase. The use of 20 parts of water, as compared with 10, for each boiling makes the carbohydrate extraction more complete. By this latter method vegetable marrow, lettuce, and celery can be completely freed from available carbohydrate, and canned spinach, canned asparagus, turnips, beets and onions can be rendered approximately carbohydrate-free. Canned string beans, cauliflower, pumpkin, cabbage and carrots still retain about 0.5 per cent. of available carbohydrate. Sodium bicarbonate added in 0.05 and 0.1 per cent. concentration markedly favors the completeness of the carbohydrate extraction in most vegetables. This is very marked in the case of cauliflower.

Factors Governing Urea Excretion.—The physiologic studies presented by Austin and others afford a basis for detecting abnormalities in urea excretion, but not for interpreting the significance of such abnormalities.

Toxicity of Neo-Arsphenamin.—It is suggested by Raiziss and Falkov that the variation in the completeness of substitution in the amino groups accounts for the irregularity of the toxicity and therapeutic effect of neo-arsphenamin.

Blood Changes After Pylorus Closure.—The operation of closure of the pylorus was performed on eight dogs in an attempt to reproduce the clinical condition known as gastric tetany. Great disturbances in certain fundamental physicochemical equilibria took place in the blood after this operation: (1) A marked increase in the carbon dioxid combining power of the blood; (2) a striking fall in the concentration of chlorin ions; (3) a slight increase in the concentration of calcium in the serum; (4) the p_H of the plasma, after operation, showed only an insignificant rise; at death it fell rapidly; (5) the concentrations of sulphur and phosphorus were markedly increased, and (6) the concentration of sodium was diminished in two out of three cases. The explanation for the blood changes observed seems fairly clear. The alkalosis is evidently an exaggeration in duration and extent of the alkaline tide occurring normally after meals. The formation and secretion of hydrochloric acid by the cells of the gastric mucosa necessitate the removal from the blood stream of hydrogen-ions and chlorin ions. The former exist in the blood mostly as carbonic acid, the latter in the form of sodium chlorid. This process of selective secretion liberates bicarbonate ions and sodium ions which unite to form sodium bicarbonate and, in this fashion, bring about an increase in the alkaline reserve.

Effect of Parathyroidectomy on Blood Chemistry.—The effects of parathyroidectomy on the calcium, sugar, combined carbon dioxid, and hydrogen-ion concentrations of the blood were studied by Hastings and Murray. The previously observed calcium deficiency in parathyroidectomized dogs was verified, but no support is found for theories based on a disturbed acid-base equilibrium. General theoretical considerations are outlined which may be of some value in explaining the relationship between tetany and the relative concentration of certain ions in the blood.

Variations in Basal Metabolism.—Harris and Benedict investigated the variability in the basal metabolism of the normal individual. The metabolism of the "normal" subject is not constant even with practically constant body mass but is to some extent in a state of flux.

Journal of Orthopaedic Surgery, Lincoln, Neb.

March, 1921, **3**, No. 3

Hallux Valgus, Rigidus and Malleus. M. Jensen, Leyden, Holland.—p. 87.
*Congenital Torticollis. H. W. Meyerding, Rochester, Minn.—p. 91.
*Curative Play System of Children's Mercy Hospital of Kansas City, Mo. R. E. McE. Schauffler, Kansas City, Mo.—p. 98.
Case of Loose Osteocartilaginous Bodies in Knee Joint. P. Blanco, Rochester, Minn.—p. 104.

Congenital Torticollis.—Only twenty-six of more than 212,000 patients examined in the Mayo Clinic from January, 1910, to October, 1919, had a diagnosis of congenital torticollis and operation. The average age of these patients was 17. Twenty-three of the twenty-six had had no previous treatment. Eight patients had been traumatized at birth, five by the use of forceps or by unusually long and difficult labor, two in breech presentations, and one in transverse presentation. One ascribed the cause to injury soon after birth. Seventeen gave no definite cause for the condition or history of trauma. The treatment of congenital torticollis is surgical. Divide all contracted structures, overcorrect the deformity and maintain the new position by means of plaster casts. Unless the patient is seen in the early stages subcutaneous tenotomy should be avoided, and even early it is attended by the danger of hemorrhage and incomplete operation. The sternoclavicular route is preferable to the mastoid, although the scar from the latter is less noticeable because of the covering of hair. The Mikulicz operation of removing the lower two thirds of the sternoclaidomastoid and the cervical fascia leads to the danger of damaging the spinal accessory nerve and vessels and has not been found necessary in any of the Mayo Clinic cases.

Curative Play System.—Schauffler maintains that curative exercises prescribed by the orthopedic surgeon, and supervised by a special teacher, by being made attractive by the choice of apparatus, by the introduction of competition and by the final submerging of the exercise in real play, have a therapeutic value not otherwise obtainable.

Medical Record, New York

April 9, 1921, **99**, No. 15

Fundamental Principles of Thoracic Surgery. W. Meyer, New York.—p. 593.
*Routes of Access to Heart. R. Matas, New Orleans.—p. 595.
*Advantage of Mental Therapy in Organic Nervous Disorders. L. P. Clark, New York.—p. 599.
Clinical Syphilis of Central Nervous System; A Preliminary Study. J. W. Stephenson, New York.—p. 605.
Diagnosis of Stomach Conditions. C. F. Morsman, Spokane, Wash.—p. 608.
Tubal Pregnancy; Report of Case. J. W. Winston, Norfolk, Va.—p. 611.

April 16, 1921, **99**, No. 16

Jaundice. J. B. Deaver, Philadelphia.—p. 639.
Tonsillectomy and Adenoidectomy. L. M. Hubby, New York.—p. 641.
Clinical and Laboratory Tests in Hyperthyroidism. H. R. Harrower, Glendale, Calif.—p. 645.
Reestablishment Insurance. Organization for Purpose of Adding Materially to Length of Days and Enhancing Productivity. J. M. Taylor, Philadelphia.—p. 648.
Triple Calcium Phosphate as Stimulant for Bone Reproduction (Healing) in Fractures. R. J. Behan, Pittsburgh.—p. 650.
Concept of Roentgen-Ray Pathology. XI. Esophagopathy. A. J. Pacini, Washington, D. C.—p. 652.
Contributions of Press to Lay Concept of Mental Ill Health. D. A. Laird, Iowa City, Iowa.—p. 655.

Operation for Foreign Body in Heart.—Judging by statistics on surgical intervention for the removal of foreign bodies from the heart, Matas says, it plainly follows that nonintervention should be the rule. Evidently, however, the indications for operation cannot be formulated by mere statistics. The indications for operations are not amenable to rules. The indication must be based on the individual prognosis from the point of view of the condition of the patient, the degree and duration of his disability. It is only when life is threatened by the presence of the projectile, and the patient thoroughly undestands his danger as well as the risks of the operation that this can be regarded as justifiable. If an operation is decided on, it is then that the advances and the new knowledge of the technic acquired by the experience of the late war will prove to be an invaluable acquisition.

Mental Therapy.—Clark is convinced that sufficient data are at hand to show that improved principles of pure mental therapy have already shown how all sorts of spasmodic disorders, constitutional or functional in origin, and many psychotic syndromes supposedly of analogous somatic basis may be helped radically or cured by such therapy. Further, various other visceral disorders may not only be cured or brought to a practical arrest by mental treatment but this whole psychic approach in general medicine bids fair to offer one of the best rational explanations of some organic disease. By due heed and caution in the earliest application of mental therapy the method may offer one of the greatest advances to preventive medicine of recent times.

Military Surgeon, Washington, D. C.

March, 1921, **48**, No. 3

Second Division at Chateau Thierry, June, 1918. L. C. Duncan.—p. 253.
Pneumonia Following Influenza in Camps in United States. E. F. Irons.—p. 275.
Report of Sixty Operations Performed Under Local and Regional Anesthesia. A. M. Hanson, Faribault, Minn.—p. 306.
Use of Surgical Solution of Chlorinated Soda, Dichloramine-T, and Eusol, in Treatment of Suppurating Wounds. Lieutenant Wyant.—p. 310.
Experiences of a Medical Officer in 1849. L. C. Duncan.—p. 314.
Plan of Medical Evacuation. M. A. W. Shockley.—p. 319.
Factors Making for High Venereal Rate of U. S. Army in China. I. A. Pelzman.—p. 329.
Casualty Clearing Station. A. H. Safford.—p. 334.
Tonsillectomy in Military Service. R. Reynolds.—p. 341.
Doctors in Uniform. H. W. Dana, Boston.—p. 347.

Minnesota Medicine, St. Paul

April, 1921, **4**, No. 4

Regional Anesthesia in Surgery of Head. G. L. Labat, Rochester.—p. 195.
Ocular Tuberculosis. F. E. Burch, St. Paul.—p. 198.
Methods of Meeting So-Called Shortcomings of Local Anesthesia. R. E. Farr, Minneapolis.—p. 209.
Present Concept of Local Anesthesia Technic. S. R. Maxeiner, Minneapolis.—p. 215.
Present Status of Local Anesthesia Problem. A. F. Bratrud, Minneapolis.—p. 218.
Delayed Union and Nonunion of Radius and Ulna. H. W. Meyerding, Rochester.—p. 323.
Surgical Tuberculosis in Children. W. H. Cole, St. Paul.—p. 228.
Ocular Imbalance (Heterophoria). J. H. James, Mankato.—p. 237.
Physical Examination of Normal Heart of Child. M. Seham, Minneapolis.—p. 240.
*Spina Bifida. H. W. Woltman, Rochester.—p. 244.
*Tuberculous Peritonitis. C. H. Mayo, Rochester.—p. 259.

Spina Bifida.—Woltman reviews 187 cases, including three associated cases of myelodysplasia without demonstrable bony defect. Cord involvement was found in 67 per cent. of the cases. The cases were divided as follows: Spina bifida cystica, 138 cases; 7.9 per cent. cervical, 5 per cent. dorsal, 65 per cent. lumbar, 21 per cent. sacral; cord involvement, 69 per cent. Spinal bifida occulta, 46 cases; cord involvement, 59 per cent. Heredo-familial developmental defects were present in ten cases. The chief complaints of the 187 patients were: tumor, 112 cases; incontinence, 35 cases; paralysis, 31 cases; foot deformity, 28 cases; hydrocephalus, 16 cases; trophic ulcer, 9 cases; tired legs, 4 cases; faulty gait, 3 cases; symptoms cerebral origin, 2 cases; Friedreich's ataxia, 1 case; enuresis, 1 case; unrelated, 30 cases. Tardy appearance of symptoms and progressive loss of function was present in 14.4 per cent. of patients. The operative results in 57 cases were: cure, 22 cases; improved, 23 cases; operative deaths, 12 cases (21 per cent.); postoperative hydrocephalus, 2 cases.

Tuberculous Peritonitis.—Mayo considers cases of tuberculous peritonitis very favorable for cure in most instances at least if the abdominal condition is the main factor. The possibility of cure of such forms of tuberculosis is due to its being confined where it can be attacked by nature's forces, as a gland is destroyed by disease and undergoes caseation and calcification in the curative process. In areas that can be spared without destruction to life, surgical elimination is

of great benefit. Thus nature can cure tuberculous peritonitis in pure form. Mixed infection destroys tissue, but added toxins are destructive to life as well as to tissue and are more chronic and difficult to treat or control. If ascites in tuberculous peritonitis adds so enormously to the surface area involved in a tuberculous process and must be overcome by changes in the peritoneum by changing the exudate from serous to fibrinous and plastic adhesions before cure occurs, such surgical treatment as will hasten the process is advisable. The important question is with regard to the permanency of cure and restoration to health. Death or even ill health rarely comes from obstruction due to the adhesions. When acute obstruction develops it is due to a single band or the hyperplastic variety without ascites. By removing the focus of disease in tuberculous peritonitis, especially when such a focus involves a tuberculous mucous membrane, a high percentage of permanency of cure with a very low primary operative mortality is secured.

Neurological Bulletin, New York

March, 1921, **3**, No. 3

Statistics of Epidemic Encephalitis. I. S. Wechsler, New York.—p. 87.
*Morbid Anatomy of Epidemic Encephalitis as Regards Endocrine System. H. S. Howe, New York.—p. 92.
Lethargic Encephalitis with a Progressive Paralysis Agitans Syndrome. G. A. Blakeslee, New York.—p. 100.
Portencephalitic Involuntary Movement. A. Polon, New York.—p. 106.
Epidemic Encephalitis with Tachyrespiria. L. S. Aronson, New York. —p. 113.
Delayed Diagnosis in Case of Epidemic Encephalitis. A. S. Maclaire, New York.—p. 117.
Case of Hemidystonia; Dystonia Musculorum Deformans. C. Rosenheck, New York.—p. 120.

Epidemic Encephalitis and Endocrine Glands.—In four cases of epidemic encephalitis studied clinically and postmortem with reference to the effect of the disease on the glands of internal secretion, some clinical manifestations that might be interpreted as endocrine disturbances were found. Among these are profuse sweating, weakness and low blood pressure, menstrual disturbances and impotence, and disorders of metabolism resulting in marked increase of weight. It seems probable to Howe that further study will show these disturbances to be dependent primarily on the lesions in the nervous system or the direct effect of the disease toxins on the individual internal secretory organs causing altered functions without distinct histological changes. With the exception of the anterior lobe of the pituitary, there were no definite pathologic alterations found in any of the glands of internal secretion which could have been the result of the terminal illness. In the pars anterior of the pituitary two kinds of alterations were observed: first, a predominance of basophilic cells, and second, areas of focal necrosis and capillary thromboses. The focal necroses and capillary thrombi are somewhat similar to the condition found in the liver in typhoid fever and in some cases of sepsis. These necroses were not prominent in any of the specimens studied, and it is doubtful if they were sufficient to cause much alteration in the function of the gland.

New Jersey Medical Society Journal, Orange

March, 1921, **18**, No. 3

Essential Uterine Hemorrhage. W. A. Dwyer, Paterson.—p. 73.
Focal Infections in Relation to Eye Diseases. W. D. Olmstead, Trenton.—p. 77.
Compulsory Health Insurance. P. Correll, Easton, Pa.—p. 83.
Placenta Praevia—Plea for Prophylaxis Based on Its Etiology. J. F. Condon, Newark.—p. 86.
Summary of Reasons Why Medical Profession Is Opposed to Compulsory Health Insurance. F. C. Hammond, Philadelphia.—p. 94.
Plea for Breast Feeding and Medical Supervision During Infancy and Childbirth. W. London, Perth Amboy.—p. 95.
Case of Enterovesical Fistula. F. H. Glazebrook, Morristown.—p. 97.
Cauliflower Cancer of Cervix in Woman Aged Twenty. W. F. Darnall, Atlantic City.—p. 98.

New Orleans Medical and Surgical Journal

March, 1921, **73**, No. 9

Reminiscences of Dr. Andrew W. Smyth of Subclavian Aneurysm Fame. E. Souchon, New Orleans.—p. 352.
Gospel of Error. C. E. Kells, New Orleans.—p. 358.
Classification of Râles. J. B. Guthrie, New Orleans.—p. 370.
Solitary Abscess of Kidney. H. W. E. Walther, New Orleans.—p. 376.
Scarlet Red Emulsion for Treatment of Ozena. J. H. Powell, Atlanta, Ga.—p. 383.

April, 1921, **73**, No. 10

Subacute Infective Endocarditis. I. I. Lemann, New Orleans.—p. 410.
*Acute Nephritis in Syphilis. D. N. Silverman, New Orleans.—p. 415.
Hemorrhagic Osteomyelitis of Femur. P. G. Lacroix, New Orleans. —p. 420.
Case of Retinitis Proliferans. J. Dupuy, New Orleans.—p. 423.
Vaccine Therapy Most Rational and Effective Method of Preventing Whooping Cough in Public Institutions. C. J. Bloom and G. J. De Reyna, New Orleans.—p. 426.
Demonstration of Plates Made with Bucky-Potter Diaphragm. E. C Samuel and E. R. Bowie, New Orleans.—p. 427.

Acute Nephritis in Syphilis.—Silverman reports two cases of acute nephritis, in which clinically the kidney lesion was in close relation to the existing syphilis. There was no other accountable cause, and the disease responded promptly to antispecific medication. One of the patients could not be followed to note the ultimate results of treatment and thereby prove its undisputed syphilitic nature. However, neoarsphenamin was beneficial, and the signs of nephritis gradually subsided under its use.

New York Medical Journal

April 6, 1921, **113**, No. 11

Phases of Visceral Displacements in General Practice. C. A. L. Reed, Cincinnati.—p. 497.
Interpretation of Blood Pressure Variations. H. Wheelon, St. Louis. —p. 505.
Effect of Digestive Period and Other Factors in Reactions After Blood Transfusions. J. L. Butsch and W. Ashby, Rochester, Minn.—p. 513.
Value of Pneumothorax Treatment of Pulmonary Tuberculosis. E. P. Boas, New York.—p. 517.
Induced Pneumothorax in Treatment of Pulmonary Tuberculosis. B. Stivelman, Bedford Hills, N. Y.—p. 521.
Measures for Control of Tuberculosis in Cattle. C. J. Marshall, Philadelphia.—p. 525.
Surgical Complications of Pneumonia. M. Behrend, Philadelphia. —p. 527.
Generator of Constant Current for Production of Roentgen Rays. S. Tousey, New York.—p. 529.
Advanced Pathologic Conditions Observed in South China. J. O. Thomson, Canton, China.—p. 530.
Elephantiasis with Reference to Syphilis. J. Lintz, New York.—p. 535.
Pathology of So-Called Sprains of Wrist. E. F. Cyriax and S. Melville, London.—p. 538.
Lesion of Occipital Lobe Simulating Cerebellar Involvement. A. Gordon, Philadelphia.—p. 540.

Northwest Medicine, Seattle

March, 1921, **21**, No. 3

Certain Problems Connected with Surgery of Gallbladder. G. W. Crile, Cleveland.—p. 53.
Early Gallbladders. J. R. Corkery, Spokane.—p. 56.
Injuries of Pancreas; Report of Case of Subcutaneous Injury. M. C. Stuart, Portland.—p. 58.
Untoward Symptoms Following Intravenous Injection of Arsphenamin. D. R. Ross, Salem.—p. 63.
Simplified Technic for Administering Arsphenamized Serum. C. L. Shields, Salt Lake City.—p. 65.
Importance of Surgical Removal of Teeth, or Work of Minor Oral Surgeon. W. C. Shearer, Portland.—p. 66.
Quick and Safe Method of Choosing Donors for Blood Transfusions. G. W. Millett, Portland.—p. 68.
Dislocation of Carpal Semilunar Bone. C. R. McClure, Portland. —p. 70.

Oklahoma State Medical Assn. Journal, Muskogee

March, 1921, **14**, No. 3

Report of Case of Sinus Thrombosis Complicating Mastoid. A. W. Roth, Tulsa.—p. 45.
Nasal Hydrorrhea. F. S. King, Muskogee.—p. 48.
Involvement of Maxillary Sinus in Acute Rhinitis. L. A. Newton, Oklahoma City.—p. 50.
Etiological Importance of Focal Infection in Ophthalmic Practice. A. C. McFarling, Shawnee.—p. 54.

Texas State Journal of Medicine, Fort Worth

March, 1921, **16**, No. 11

Chronic Gastric and Duodenal Ulcers. W. B. Russ, San Antonio. —p. 475.
Perforating Gastric and Duodenal Ulcers. C. C. Cade, San Antonio.—p. 477.
Drainage of Abdominal Cavity, with Special Reference to Use of Rubber Glove. M. F. Bledsoe, Port Arthur.—p. 478.
Acute Dilatation of Stomach Following Gynecologic Operations. P. I. Nixon, San Antonio.—p. 481.
Fractional Estimation of Gastric Contents During Duodenal Alimentation. M. D. Levy, Galveston.—p. 483.
Hunger Pain, or Food Relief. F. A. Wapples, Houston.—p. 486.
Endocrine Interrelation and Ovarian Function. C. Rosser, Dallas. —p. 488.
Rôle of Pituitary Body in Etiology and Therapy of Diabetes Insipidus. D. W. Carter, Jr., Dallas.—p. 491.
Organized Medicine: Its Ideals and Accomplishments. C. M. Rosser, Dallas.—p. 495.

U. S. Naval Medical Bulletin, Washington, D. C.

April, 1921, **15**, No. 2

*Treatment of Influenza. J. L. Neilson.—p. 259.
*Intravenous Use of Magnesium Sulphate and Calcium Chlorid in Severe Pneumonia Complicating Influenza. J. J. Hogan.—p. 277.
Accidental Injuries from Electric Currents. W. J. Zalesky and W. T. Brown.—p. 279.
Methods of Sterilization in Dentistry. H. E. Harvy.—p. 282.
Peptic Ulcer. C. S. Norburn.—p. 285.
Survey of Fifty General Court-Martial Prisoners. C. H. Castle.—p. 291.
Systematized Hospital Training of Apprentices. A. H. Ehrenclou. —p. 296.
Methods of Instructing Hospital Corpsmen. W. M. Kerr.—p. 302.
Plan for a Standard Treatment of Venereal Disease as a Prophylactic Measure. W. D. Owen.—p. 308.
Plan of Organization for Naval Hospital of 300 Beds and Over as Utilized at Great Lakes, Illinois, 1920. R. P. Crandall and W. A. Angwin.—p. 316.
Surgery in Middle Ages. J. S. Taylor.—p. 347.

Sodium Salicylate Intravenously in Treatment of Influenza.—Sodium salicylate, used properly, Neilson found, can be given intravenously without harmful effects and produces a favorable result in that it relieves pain and restlessness and saves the patient from the wear and tear of a severe toxemia and places him in a better position to fight more serious developments of the disease. In progressing to health without complicating pneumonia the patients so treated showed rapid convalescence with a minimum of sequels. Sodium salicylate should not be used if there is evidence of beginning pneumonia. Magnesium sulphate used properly can be given intravenously without harmful results and on most patients produced a most marked improvement in general condition and relieved edema of the lung and brain. Its best effect is produced when administered at the start of pneumonia and edema and if used at this time its effect on blood count is more apt to be permanent. When used late and when the patient is deeply cyanosed and unconscious with lungs full, its favorable action was transient. Patients recovering after the use of magnesium sulphate showed rapid convalescence with minimum of sequels. The great advantage of the magnesium sulphate solution lies in the readiness of materials, simplicity of equipment required, brevity of preparation, and the fact that it can be prepared in advance and kept for long periods. Blood transfusion, using whole blood by the citrate method, can with care be used safely under even unfavorable conditions as regards asepsis. Tests, previous to use, for syphilis, isohemolysins and isohemagglutinins are essential to safety. Results in pneumonia cases even of several days' duration, unconscious and deeply cyanosed, were markedly favorable (edema cleared, pneumonic process localized, brain symptoms disappeared, white count rose) and the general condition improved and rapid convalescence followed, with a minimum of complications. For the treatment of the acute respiratory infection, blood transfusion has produced better results than any other one method. Absolute rest in bed is the most essential element of treatment. White-blood counts are essential guides to proper treatment. In general a stationary white count either high or low is favorable. A falling white count is a danger sign. A falling white count with rising temperature shows a seriously ill patient, and, if cyanosis is added, a critically ill patient.

Magnesium Sulphate and Calcium Chlorid Intravenously in Influenzal Pneumonia.—Of 220 cases of influenzal pneumonia in the navy yard, Mare Island, Calif., and in Vallejo, Calif., fifty, or 22.7 per cent., were treated by the intravenous use of magnesium sulphate and calcium chlorid with a mortality of 16 per cent. Of pneumonia patients treated by symptomatic measures at the naval training camp 41.7 per cent. died, and at the civilian hospitals 42.8 per cent. died. Hogan is convinced that the intravenous use of magnesium sulphate and calcium chlorid is justified.

West Virginia Medical Journal, Huntington

March, 1921, **15**, No. 9

Infant Feeding. C. L. Holland, Fairmont.—p. 321.
Heat and Cold in Treatment of Superficial Inflammation. W. W. Strange, Huntington.—p. 326.
Organotherapy as Aid in Gynecology, with Special Reference to Pituitary Gland. M. V. Godbey, Charleston.—p. 328.
Coexistence of Gallbladder and Appendiceal Infection. W. A. Quimby, Wheeling.—p. 330.
Use of Nitrous Oxid-Oxygen as Anesthetic of Choice. Hays.—p. 332.
Appendicitis Complicating Pregnancy. R. K. Buford, Hansford. —p. 335.
Prophylaxis and Treatment of Eclampsia. C. A. Grooms, Daris.— p. 338.
Epidemic Encephalitis (Miscalled Lethargic). T. A. Williams, Washington, D. C.—p. 340.

Wisconsin Medical Journal, Milwaukee

March, 1921, **19**, No. 10

Special Field of Neurologic Surgery After Another Interval. H. Cushing, Boston.—p. 501.
Rehabilitation of Undernourished Child. J. P. Koehler, Milwaukee. —p. 521.
Public Health Problems of Childhood and How They May Be Attacked. C. A. Harper, Madison.—p. 524.
Some Aphorisms of Endocrines. H. M. Brown, Milwaukee.—p. 527.
Basal Metabolism in Hyperesthetic Rhinitis. F. J. Novak, Chicago. —p. 534.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

March, 1921, No. 248

Some Uses of Infrequently Interrupted Faradic Current. J. N. Leitch. —p. 290
Diagnosis and Differential Diagnosis of Tuberculosis in Bones and Joints. G. Forssell.—p. 293.
Bucky Diaphragm Principle Applied to Roentgenography. H. E. Potter. —p. 310.

British Medical Journal, London

April 2, 1921, **1**, No. 3144

Treatment of Fractures. S. A. Smith.—p. 483.
*Etiology of Eclampsia and Pre-Eclamptic State. J. Young and D. A. Miller.—p. 486.
*Cardiac Peristalsis and Mitral Stenosis. D. W. Samways.—p. 490.
Bilharzia Disease in Egypt. J. B. Christopherson.—p. 491.
Five Hundred Cases of Malaria in Pensioners. J. Hoskin.—p. 493.
Surgical Uses of Fascia Lata. C. H. Cuff.—p. 494.
Incubation Period of Scarlet Fever. A. M. Watts.—p. 495.
Measles, Intussusception and Appendicectomy in a Baby Seven Months Old. B. W. Gowring.—p. 495.
Sarcoptic Mange of Dog in Man. W. H. Coates.—p. 495.

Etiology of Eclampsia.—A study of forty cases of toxemia and associated conditions made by Young and Miller confirmed previous findings that eclamptic and the pre-eclamptic toxemia is dependent on a placental necrosis. When time is allowed for the elaboration of toxic elements from the detached placenta toxemia develops. In concealed accidental hemorrhage, therefore, toxemia is conspicuous. Absorption of placental poisons only occurs if and while part of the placenta remains attached to the uterine wall. Toxemia occasionally accompanies placenta praevia for the same reasons. The toxemia develops after the hemorrhage; it is therefore not the cause of the bleeding in accidental hemorrhage. The major symptoms of eclampsia are prabably due to the flooding of the mother's system with the breaking-down products of liver cells (and perhaps of other tissues), which were killed some hours or days previously by the placental poison. Recent investigations on shock (Quenu, Delbet, etc.) support by analogy this conception of eclampsia.

Cardiac Peristalsis and Mitral Stenosis.—Samways states that there is considerable evidence to show that the contraction of the auricle normally overlaps that of the ventricle, lasting probably till the moment of opening of the aortic valves. In cases of mitral stenosis this overlapping tends to be still further prolonged, invading, therefore, the expulsive portion of the ventricular systole. The ventricle could not prevent the auricle sending its residual blood into it, if their contractions overlapped, because at that time the auricle, being small, would have few units of area of blood to contract on, and a thickened mass of muscle to exert the necessary pressure, whereas the ventricle would be in exactly the reverse position at the time. In cases in which the mitral valve was stenosed, the auricle would be further helped by hypertrophy of its walls and thinning of those of the ventricle. The murmur of mitral stenosis ("presystolic") goes up to and into ventricular-systolic time because the blood flow does likewise. The murmur is "crescendo" in character because the auricle can exert an ever-increasing pressure on its contents as it contracts. Theoretically, the pressure can increase inversely as the cube of the decrease in diameter. Regurgitation through

an incompetent mitral orifice is prevented, probably for years, by the contraction of the auricle behind that orifice during the expulsive portion of the ventricular systole. The presystolic murmur is replaced by a systolic murmur when the auricle cannot decrease its size in time to become a sufficiently small chamber to defeat the oncome of the intraventricular resistance, but on the contrary is defeated by it. This will allow regurgitation, the auricle will speedily dilate, fibrillate, and compensation will break down. Temporary recovery by rest or bleeding will probably mean that the auricle becomes again, for a short time, master of the situation.

Edinburgh Medical Journal

April, 1921, **26**, No. 4

Prenatal Death. A. Robinson.—p. 209.
Physical Therapeutics from Surgical Standpoint. J. S. Ross.—p. 232.
Human Gestation and Our Embryologic and Morphologic Data. J. Oliver.—p. 245.
Case of Primary Brachial Neuritis Treated by Stretching Cervical Plexus. D. M. Greig.—p. 247.
*Case of Peripheral Neuritis Occurring in Pregnancy. W. E. Foggie.—p. 250.

Peripheral Neuritis During Pregnancy.—Foggie's patient, aged 26, had always enjoyed good health, although she was of a somewhat nervous temperament. At the end of the first month of her pregnancy, sickness, pain, and vomiting set in very violently and continued for two months. She become very exhausted and emaciated. Her memory failed and she was at times delirious. After two months the condition of hyperemesis passed off, but she noticed that she was unable to move her legs; she had also a numbness about the hands, and in the legs. There was pain in gripping the calves firmly, and this was also present to a slight degree in the arms. There was an impaired feeling to touch over the hands and fingers up to the wrists. In the legs this impairment extended up to the knees. An electrical examination was not possible. The grasp was feeble. As the patient lay in bed she was able to pull up the thighs but could only get them down by a side movement. There was no difficulty in resisting this or any other movement in the lower limbs. She was unable to extend the leg at the knee and could only flex feebly. She had slight power of moving the feet and the toes. If seated, she had great difficulty in rising. There were no reflexes at the wrist. The knee jerks were absent, and also the Achilles jerks. No ankle clonus could be elicited. The patient was delivered of a healthy living child at full time. The various symptoms continued throughout the pregnancy but cleared up completely about four months after the birth.

Journal of Trophical Medicine and Hygiene, London

March 15, 1921, **24**, No. 6

Some Cosmopolitan Sudan Skin Affections. A. J. Chalmers and N. McDonald.—p. 69.
*Two Cases of Gangosa in Natives of the Solomon Islands, Western Pacific. N. Crichlow.—p. 74.
Histology of Goundou. W. A. Young.—p. 76.
Development of Leishman-Donovan Bodies. J. E. R. McDonagh.—p. 77.

Antimony Intravenously in Gangosa. — Two different methods of treatment were employed by Crichlow in these cases. In one case colloidal antimony, 0.5 c.c., was injected intravenously twice weekly, with an interval of three days between the injections. The ulceration was bathed daily with a weak solution of potassium permanganate. After the first week the ulceration showed signs of healing. The secretion became less and was not so foul smelling, and the ulceration became "clean." After the second week the ulceration was nearly healed and after the third week the ulceration was completely healed. A perforation in the hard palate had closed up. Six injections of colloidal antimony were given. As an adjunct treatment, potassium iodid, 5 grains, three times daily, was also given. In a second case galyl was used instead of antimony. It was administered intramuscularly. One dose of 15 cg. was given weekly. Only three injections were necessary, as after the third injection the ulceration was completely healed. The ulceration was also washed daily with a weak potassium permanganate solution and potassium iodid was also given. The result of the treatment in these two cases made Crichlow come to the conclusion that gangosa is a disease caused either by a spirochete or by a leishmania.

Lancet, London

April 2, 1921, **1**, No. 5092

*Idioventricular Rhythm, and Theory of Disturbed Reflexes. J. Mackenzie.—p. 679.
Medico-Military Training. H. E. R. James.—p. 683.
*Treatment of Infectious Diseases by Leukocytolysis; Produced by Roentgenization of Spleen. I. I. Manoukhin.—p. 685.
Typhoid Carrier Case. J. R. Carver.—p. 687.
*Vascular Change During Uterine Involution. G. Evans.—p. 689.
Two Cases of Perinephric Abscess. O. Wilberforce and W. Harris.—p. 691.
Herpes Zoster and Varicella. J. Watt.—p. 691.

Idioventricular Rhythm. — Mackenzie describes certain abnormal states of the heart in which the principle embodied is not the question of the action of the auricle during the irregular action of the ventricle, but the question of the action of the ventricle itself and he demonstrates the application of the theory of disturbed reflexes in certain obscure cardiac conditions. He also shows the effect of an abnormal rhythm on the functional efficiency of the heart. Mackenzie says that the best method, in fact the only method, for obtaining a knowledge of the heart's efficiency in a person who is able to get about, is by appreciation of response to effort. This knowledge can be obtained not by any form of exercise in the doctor's consulting room, but by eliciting a clear account of the manner in which the patient responds to those efforts made in his daily life where the circumstances cannot be imitated by any artificial method, such as the sensations experienced on walking up a hill, or on walking after a full meal or in the cold air. When there is impaired efficiency of the heart, these experiences give rise to certain very definite sensations, and these sensations are of the nature of disturbed reflexes. Thus the vast majority of people whose heart's efficiency is impaired suffer at times from one of two kinds of sensation, breathlessness or pain, with their accompanying sensations. In breathlessness the respiratory reflex is disturbed, and in pain the viscerosensory reflex peculiar to the heart is disturbed.

Treatment of Infectious Diseases by Leukocytolysis.—Leukocytolysis, produced by radiating the spleen with a stimulating dose of roentgen rays, Manoukhin regards a sure method of governing the blood reaction of the organism. Experimental work on monkeys infected with tuberculosis led to the adoption of this principle of treatment in human cases. The human spleen is radiated by a dose of roentgen rays equal to one hour as measured by the Sabouraud and Noire radiometer, using the Holtzknecht scale. In the case of weak patients a smaller dose is given. The rays are filtered through 1 mm. of aluminium. Manoukhin obtains this dose during five minutes at 1 ma. and 5-7 a. with rays whose hardness is 8 on Benoist's radiochromometer and 10 on Wehnelt's criptometer, (the hardness of the rays and duration of radiation are varied in relation to the gravity of the case), and with the anticathode at a distance of 25 cm. from the body. The method has been used in cases of pulmonary tuberculosis, typhoid, tetanus, and other infectious diseases.

Vascular Changes During Uterine Involution.—The condition of the arteries in a uterus removed twenty-four days after delivery of a dead fetus was studied by Evans. The sections showed the usual changes in the vessel walls characteristic of normal arterial involution. The most striking changes occurred in the intima; there was a cellular proliferation and hyaline swelling of the subendothelial layer, together with a swelling and splitting of the internal elastic lamina. In the media there was the appearance of a granular atrophy of the muscle fibers and a hyaline swelling of the intermuscular connective tissue fibrils.

Practitioner, London

April, 1921, **106**, No. 4

*Nasal Sinus Infection Causal Factor in Appendicitis. P. Watson-Williams.—p. 229.
Nasal Obstruction and Its Consequences. F. Muecke.—p. 236.
Deflection of Nasal Septum. J. Donald.—p. 250.
Diagnosis of Acute Appendicitis. E. T. C. Milligan.—p. 257.
Postoperative Treatment of Abdominal Cases. E. R. Flint.—p. 266.
Three Cases of Diverticulitis of Colon. F. D. Saner.—p. 276.
Review of Tropical Diseases. R. T. Hewlett.—p. 282.
Incontinence of Urine in Childhood. C. E. Sundell.—p. 293.

Nasal Sinus Infection as Cause of Appendicitis.—Watson-Williams claims that nasal accessory sinus infection is not

infrequently associated with appendicitis. Of ninety cases seen by him no less than fourteen had undergone appendicectomy; that is over 15.5 per cent. Cases in which symptoms of appendicitis were reported were excluded unless appendicectomy was performed. Of the fourteen cases of appendicectomy, two patients were also operated on for duodenal ulcers, while of those not included in the appendix group, there were also among the series of ninety patients two cases of gastric ulcer (one short-circuited), and several others with a history of colitis and gastric catarrh.

Archives des Maladies du Cœur, etc., Paris

January, 1921, **14**, No. 1

Auricular Extrasystoles. R. Lutembacher.—p. 1.
Alternating Beat of the Auricles. C. Pezzi and E. Donzelot.—p. 5.
Cerebral Anemia from Carotid Maldevelopment. J. De Meyer.—p. 11.

Archives Médicales Belges, Liége

September, 1920, **73**, No. 9

Hemianopsia from Wound at Base of Skull. Elewaut.—p. 739.
*Appendectomy as a Routine Procedure. R. Lévy.—p. 750.
Radiography Early in Pulmonary Tuberculosis. Dautrebande.—p. 755.

Appendectomy as a Routine Procedure.—Lévy protests against the assumption that microscopic changes in the appendix call for systematic removal of the appendix.

January, 1921, **74**, No. 1

Small Epidemic of Dysentery. Keersmakers.—p. 1.
*Treatment of Digestive Disturbances. Bienfait.—p. 9.
Brazilian Medicinal Plant, Davilla. G. Batta.—p. 15.
Physiologic Electrocardiogram. H. Fredericq.—p. 21.

Treatment of Digestive Disturbance.—Bienfait emphasizes the importance of the nervous element in all digestive disturbances. The slightest derangement of the stomach immediately affects the nervous system. The resulting symptoms may include migraine, headache, palpitations, neuralgia, tremor or general depression. Many persons with ptosis, dilatation, and deficient or excessive gastric secretion get along without any disturbance; radiography and analysis of the gastric juice would seem to point to derangement which must entail severe symptoms, but there are none. He ascribes the reason for this anomaly to the fact that the nervous system is in a tranquil condition, resting, as it were. This proves, he says, that in treatment of dyspepsia the main thing is to reduce it to a latent stage by rendering the nervous system less sensitive, giving the digestive derangement a chance to heal. Of all measures he has tried, he has found electrotherapy the most active and the most convenient method for accomplishing this, as he describes.

Bulletin de l'Académie de Médecine, París

March 15, 1921, **85**, No. 11

*Physiologic Reserve Forces. Coutière.—p. 344.
*Medical Responsibility in Anesthesia Fatalities. Courtois-Suffit and Bourgeois.—p. 348.
Mushroom Poisoning. L. Azoulay.—p. 350.
Chemistry of Fasting Stomach. L. Pron.—p. 353.

General Physiology and Reserve Forces.—Coutière comments on the remarkable range of auxiliary or vicarious organs, and he applies the term "tutiorism" to this system of reserve forces, duplication of organs and nerve tracts, and the great reserve energy of even the single organs.

Medical Responsibility in Anesthesia Fatalities.—Summarized in Paris Letter, p. 1117.

Bulletin Médical, Paris

March 5, 1921, **35**, No. 10

*Hemorrhagic Pancreatitis. A. Chauffard.—p. 191.
Orthopedic Treatment of Pott's Disease in Children. A. Trèves.—p. 193.

Hemorrhagic Pancreatitis.—Chauffard reports a case in a woman of 32 with a history of gallstone colic. Sudden pain a few hours after a meal brought her to the hospital, with her fifth babe at the breast. The symptoms suggested hemorrhagic pancreatitis, but the woman died the third day, and the discovery of retroperitoneal hemorrhage explained the clinical picture, the symptoms from this predominating over those from necrosis of the fat tissue. The pain had not been the agonizing pain common with pancreatitis. The collapse in this case was too sudden and too severe to allow surgical intervention.

March 12, 1921, **35**, No. 11

*The Brain and Meninges in Pneumonia in Children. P. Nobécourt.—p. 209.
*Treatment of Mucomembranous Enteroneurosis. G. Lyon.—p. 214.

Cerebral Reactions in Pneumonia.—The two children of 7 and 15 presented delirium and extreme excitement; in the older girl preceded by a stage of torpor suggesting coma. The symptoms seemed to indicate acute meningitis, but the spinal fluid was comparatively normal and the symptoms of pneumonia cleared up the diagnosis, and both recovered. These brain disturbances may take the form of convulsions, delirium or somnolency; the latter is most frequent and may accompany the rise in temperature. There is usually extreme hyperesthesia of the entire skin, and ocular disturbance is frequent, from ptosis to mydriasis and choked disk. The outlook is grave with suppuration in the meninges and somewhat serious even with serous meningitis. The latter may be followed by chronic hydrocephalus. Treatment must be prompt and vigorous. The main indication is to relieve the congestion of the nerve centers; hot baths are the best for this, given every four or six hours, or hot packs. Potassium bromid or chloral should be given to combat the cerebral agitation, with camphor in case of torpor. Lumbar punctures may relieve, but there is little use to repeat them in serous meningitis. If there is pus, the lumbar puncture should be repeated daily and antiserum injected, although the therapeutic action of this has not yet been decided.

Mucomembranous Colitis.—Lyon emphasizes the necessity for causal treatment and for treatment of the nervous soil and the reflex hyperexcitability of the sympathetic. The motor, sensory and secretory reactions sometimes persist after suppression of the cause. The effect of causal treatment is most brilliant when chronic appendicitis was responsible, but success is also the rule, although less rapidly, with proper treatment of ptosis, kinks, gallstones, gastric ulcer, adnexitis or neurasthenia and constipation. General treatment is of primary importance when the nervous disturbance is the main factor. A course at an appropriate watering place may prove very useful. Attacks of acute colitis require restriction to a water diet at first, with measures for coprostasis and tepid baths.

Bulletins de la Société Médicale des Hôpitaux, París

March 4, 1921, **45**, No. 8

*Tracheobronchial Adenopathies. D'Oelsnitz and Carcopino.—p. 297.
*Pneumococcus Infection. G. Caussade and A. Tardieu.—p. 300.
Wassermann Reaction in Cirrhosis of Liver. Sakorafos.—p. 304.
Clinical Exploration of Duodenum. G. Parturier and P. Vasselle.—p. 305.
*Benzoin Reaction in Spinal Fluid. E. Duhot and P. Crampon.—p. 307.
*Inguinal Lymphogranulomatosis. P. Ravaut and Scheikevitch.—p. 310.
*Hirsutism with Diabetes. P. Emile-Weil and Plichet.—p. 312.

Emergency Roentgen-Ray Treatment of Tracheobronchial Glands.—For some years D'Oelsnitz has been advocating roentgen-ray exposures in treatment of suffocation from enlarged tracheobronchial glands, and he here adds two more cases to the list, in children of 3 and 2. The sudden development of the suffocation and its almost equally sudden subsidence show that a wave of mere congestion or inflammation must have been responsible, and that the roentgen rays dispelled this transient congestion.

Pneumococcus Infection.—Caussade and Tardieu traced the pneumococcus infection from an operation on chronic dacryocystitis to the secondary pneumonia. This last localization seemed to act by revulsion, a complete cure soon following.

The Benzoin Reaction in Cerebrospinal Fluid.—Duhot and Crampon never obtained precipitation of the colloidal benzoin suspension by the cerebrospinal fluid in 52 normal persons, while it was constantly positive in 32 cases of general paresis and in 84 per cent. of 45 cases of neurosyphilis. They say that tincture of tolu can likewise serve for the test, which is rapid, simple and practical.

Granulomatosis of Inguinal Glands.—Ravaut and Scheikevitch have recently encountered six cases of this kind. In none of the cases was anything found to suggest syphilis, soft chancre, tuberculosis or plague. In the case described, the whole mass was resected, almost clearing out the triangle of Scarpa. Bacteriologic and microscopic examinations were negative.

Hirsutism.—Necropsy in Weil and Plichet's case showed complete fibrous transformation of the ovaries in the woman of 38 with a heavy beard. The other organs seemed approximately normal. The hirsutism had developed at 26 after a normal childbirth; obesity followed at 29 and diabetes at 31, galloping phthisis closing the clinical picture. They have found two similar cases on record of coincident hirsutism and diabetes mellitus. In the discussion that followed, Halle told of a young woman who had 2 liters of gangrenous pus removed from the small pelvis, where it had been laving the ovaries for some time. After recovery, coarse black hairs grew on the trunk and limbs of the blonde girl, but when the menses returned, five months later, the hirsutism disappeared. In a case in Achard's practice, the bearded woman developed diabetes but this afterwards subsided completely. Necropsy showed fatty atrophy of both ovaries, and a goiter, but menstruation had kept up beyond the age of 60.

Médecine, Paris

March, 1921, **2**, No. 6

*Cardiovascular Pathology in 1920. P. Ribierre.—p. 421.
*Action of Digitalis. H. Vaquez.—p. 432.
*Masked Forms of Rheumatismal Heart Disease. O. Josué.—p. 438.
*Quinin in Heart Disease. A. Clerc and G. Pezzi.—p. 443.
*Hemoptysis Versus Pulmonary Edema. L. Gallavardin.—p. 448.
*Infarct in the Myocardium. C. Lian.—p. 450.
*Pernicious Anemia. J. Rieux.—p. 456.
*Residual Nitrogen in Nephritis. F. Rathery.—p. 462.
*Elimination of Urine and Renal Secretion. J. Cottet.—p. 467.
*Acute Nephritis Without Nephritis. P. Ameuille.—p. 473.
*Benzene in Treatment of Leukemia. C. Aubertin.—p. 479.
*Anemia in Infants. L. Tixier.—p. 483.
*Treatment of Arterial Hypertension. Leconte.—p. 489.

Cardiovascular Pathology in 1920.—Ribierre discusses in particular radiology of the heart and the vessels at the base, electrocardiography, and the data from measurement of the blood pressure and pulse. Other progress during the year is his discovery that the signs of tricuspid insufficiency have not the pathognomonic significance that has been attributed to them. Also the advantage of ouabain in cases of dilatation of the heart with coupled rhythm in which digitalis is contraindicated. The *crise hémoclasique* has attracted much attention during the year, and the advantage of mixing blood with a 1 to 200 solution of acetic acid for the leukocyte count. This swells the nuclei in a 1 per cent. dilution and much facilitates the count. Another improvement is the rinsing with distilled water for half an hour after staining with the rapid Giemsa stain for half a minute, for dry preparations of blood. There has been much discussion during the year of the non-ureic nitrogen in the blood plasma in relation to the symptoms of uremia. This has been facilitated by the Fosse method of determination of the urea in the blood with xanthydrol. It has also been found that intravenous injection of hypertonic sugar solution reduces diuresis in azotemia.

Action of Digitalis.—Vaquez explains that we need not expect any action from digitalis when the cardiac insufficiency is the result of acute distention of the heart from loss of myocardium tonus. By lengthening the diastole it may even aggravate the symptoms. Digitalis is also useless with impaired conductivity; by still further checking conduction it might increase arrhythmia. The major indication for digitalis is complete arrhythmia, whatever its cause; the drug checks the activity of the sinus, blocks weak contractions, and allows only the strong contractions to proceed. By this means the ventricle gets filled more completely and is able to contract with more energy. By lengthening the diastole the myocardium is able to contract with greater energy, and thus the peripheral and renal circulation is benefited.

Masked Forms of Rheumatismal Heart Disease.—Josué describes the misleading conditions when articular rheumatism is developing as usual but the heart does not seem to be involved; also when the joint attacks are masked or incomplete while the cardiopathy is pronounced, or the cardiopathy presents an unusual aspect in the total absence of joint disturbances. A correct diagnosis is of vital importance to allow effectual treatment. The rheumatism may yield to the salicylates but the cardiac insufficiency may require digitalis.

Quinin in Heart Disease.—Clerc and Pezzi regard quinin as one of the few drugs which modify the rhythm of the heart Recent research has shown its advantage as a moderator of overexcitability of the myocardium, but they have not found it successful in the arrhythmia from extrasystoles. Given with digitalis, it seems to reduce the toxicity of the latter, or by alternating the two drugs they can reenforce each other. Quinin may aid in maintaining the relative balance in patients menaced with tachycardia or complete arrhythmia, by combating the tendency of the auricle to tachysystolia, which may lead to fibrillation. They suggest further the possibility that quinin might ward off chloroform syncope, which in many cases seems to be due to ventricular fibrillation. They have confirmed the fact that auricular fibrillation in dogs can be arrested by intravenous injections of quinin, the heart rhythm becoming normal at once instead of the previous complete arrhythmia.

Hemoptysis as Equivalent for Pulmonary Edema.—Gallavardin regards the case described in which the woman of 62 had been having recent attacks of suffocation and profuse hemoptysis as the equivalent of acute pulmonary edema in chronic insufficiency of the left ventricle.

Infarct in the Myocardium.—Lian urges to bear in mind the possibility of infarction of the myocardium when a vigorous, elderly person is taken suddenly with symptoms suggesting angina pectoris or lipothymia with small pulse and vomiting or frequent nausea.

Pernicious Anemia.—Rieux comments on the varied etiology, the obscure pathogenesis and uncertain effect of treatment of progressive pernicious anemia. Serotherapy has proved useful in regenerative anemia but much less so in the aplastic form. The finest results realized to date have been with transfusion of blood. When associated with splenectomy, improvement was noted in more than 50 per cent. of the cases. With arsenic treatment alone, improvement has been noted in only 7 per cent.

Residual Nitrogen in Nephritis.—Rathery concludes from his study of the residual nitrogen that when this is high the prognosis is grave in chronic nephritis. At the same time, a low figure does not preclude a grave prognosis.

Elimination of Urine and Renal Secretion.—Cottet objects to the common tendency to confound the elimination of urine with the secretion in the kidneys. They are not synonymous; the renal secretion is only one of the elements of the elimination of urine. The functioning of the kidney varies according to circumstances which modify its secretory conditions, but this functional variation, wide in the healthy, is almost totally absent in the diseased kidney, its functioning varying less the more of its parenchyma is destroyed. The output of urine is determined further by the thresholds of excretion, and these may vary from extrarenal factors. The exaggeration of the permeability of the kidney for methylene blue in nephritis with dropsy has ceased to be a mystery since we know that the elimination of sodium chlorid in the urine—a threshold substance—and that of the blue—which has no threshold—obey different mechanisms. Among the extrarenal factors is the circulation of water in the organism; when water does not reach the kidneys in normal amounts, the elimination of waste cannot proceed properly. The heart as well as the kidneys must be considered, as for example when the urea in the blood shows a certain degree of azotemia in a patient with oliguria. Before incriminating the kidneys, we should ask whether the azotemia is not in reality the consequence of the oliguria and if the oliguria is not due to factors other than the kidneys. If the urine is dark colored and rich in urea, while the amount is small and there is little or no albumin, we can ascribe a cardiac origin to the oliguria. There is usually hyposystolia in this case, but this may be masked by the lack of heart symptoms.

Acute Nephritis Without Nephritis.—Ameuille insists that the clinical picture of acute nephritis may develop without kidney disease at first, an acute nephritis without nephritis. The kidney shares in the production of the clinical picture in time, but the oliguria, albuminuria, azotemia or edema, or a combination can develop without this. They are not accompanied by symptoms in every case, the patients sometimes not complaining of any subjective disturbance. There is no necessity to assume blocking of the kidneys to explain them. There

may be some upset in the colloidal status of the blood; if certain materials which the kidney normally excretes, cling more solidly to the plasma under the influence of this upset, they do not reach the kidney, and hence the urine may be abnormal without the kidney being at fault. The acute nephritis may thus be merely a physicochemical derangement of the entire organism under the action of some toxic substance. The kidney, normal at first, in its efforts to exclude from the blood the too adherent materials, wears out like a machine pushed above its normal capacity. The nephritis which develops finally, instead of being the source of the disturbance, is only the consequence of it.

Benzene in Leukemia.—Aubertin reiterates that in leukemia benzene (benzol, C_6H_6) cannot be expected to cure, but the prolonged remissions are a great gain. Benzene treatment requires close supervision.

Anemia in Infants.—Tixier analyzes simple anemia, anemia of the chlorotic type and pernicious anemia showing how each of these require different treatment. As a rule, anemia in infants is curable. The outlook is grave only when the anemia is of the splenic type or the result of a hemolytic tendency in debilitated infants.

Treatment of High Blood Pressure.—Leconte recalls that it is much easier to prevent the evil effects of hypertension than to reduce the tension itself. With paroxysmal hypertension from acute distention of the left heart with pulmonary edema, venesection, morphin to relieve the pain and the vascular spasm, and heart tonics are called for. With cardiac asthma and pain of angina pectoris type: amyl nitrite and local revulsion, moist heat, mustard plaster over the sternum and wet cupping, followed by tonics for the heart. With permanent chronic hypertension, the harmful influence of physical and mental overexertion must be realized. If hypnotics are given, their injurious action on the kidney must be borne in mind; the frequency of syphilis in the antecedents must not be forgotten.

Gynécologie et Obstétrique, Paris

1920, **2**, No. 6

*Cesarean Section in Infected Cases. M. Brouha.—p. 385.
*Tuberculosis of Uterine Adnexa. Lenormant and Moulonguet.—p. 396.
*Salpingitis After Ventrifixation of Uterus. J. Caraven.—p. 424.
*Treatment of Infected Abortion. E. Douay.—p. 428.

Cesarean Section in Infected Cases.—Brouha offers as an argument against the assumption that abdominal cesarean section must be reserved to the clean cases, his experience with 60 cases of conservative abdominal cesarean section since 1914. Only 12 of the cases were free from suspicion of infection. In the 48 others, labor had been under way for some time, and in most of them internal examination had been done repeatedly. In 66 per cent. the membranes had ruptured from two hours to five days before. The cervix was more or less dilated in all. As there was no fever or sign of infection he did not hesitate to apply the classic technic in 39 cases, and the transperitoneal method above the symphysis in 25. The 2 deaths were in the 12 clean cases; all the others in this group healed by primary intention, and the 48 probably contaminated cases all recovered. Healing was by primary intention in 50 per cent. (membranes still intact), and even in 10 cases in which they had ruptured. In the others, there was more or less fever, with some suppuration in the abdominal wound, but no infection of the peritoneum in any instance. No difference in the outcome could be detected between the classic and suprasymphyseal technic. The results obtained justify waiting long for the natural forces to act, before the case becomes too contaminated for cesarean section.

Tuberculosis of Uterine Adnexa.—Lenormant and Moulonguet give the details of 16 operative cases. Abdominal hysterectomy was done in 13 with recovery of all but one, and recovery in the 2 treated by unilateral salpingectomy. The remote results are generally good and the recoveries permanent in cases of this kind. Olivier has reported 72 in perfect health out of 80 followed for years, and others equally good results. Of the 16 cases here reported, 2 of the 4 in which the outcome is known are in good health among those operated on before 1914.

Salpingitis After Ventrifixation of the Uterus.—Caraven gives an illustrated description of a case of purulent salpingitis with hernia of the tube through the omentum, consecutive to Doleris' intraparietal fixation of the round ligaments to correct retroversion. The traction on the portion of the round ligament close to the uterus pulls the tube with it, and the operator may have trouble in reducing the tube to its place. The case of intraparietal and extraparietal salpingitis here reported confirms the danger from this technic.

Treatment of Infected Abortion.—Douay warns that a chill is the most important symptom of extension of the infection beyond the uterus. The general aspect, even in grave cases, may keep satisfactory. If there is no discharge, and no reason to assume retention, there is no advantage in curetting, while it exposes to grave dangers. He urges to prepare for vaginal hysterectomy, and then to explore the cavity of the uterus. If only insignificant débris are found, he advises vaginal hysterectomy at once, without delay. But if, on the other hand, a piece of placenta is found, it is better to wait for a few days. A fixation abscess is useful not only for diversion of the infection but as an indication of the gravity of the case; the reaction shows whether the organism is capable of defending itself. The uterus cleared out, repeated and abundant lavage of the uterine cavity or continuous irrigation is useful if it is not traumatizing. He never obtained any better results with strong disinfectants than with boiled water with hydrogen dioxid. In a case with complications, intra-uterine injections should be suppressed and the patient kept absolutely quiet, with ice to the abdomen. If the adnexa are swollen, colpotomy, unless the inflammation is subsiding. If the fever persists, vaginal hysterectomy should follow unless there is phlebitis in the pelvis. In this case, the abdominal route should be selected to allow ligation of the thrombosed veins before removing them with the uterus and the adnexa. In the grave cases, even after removal of the principal focus, streptococci are still left in the pelvis, and the whole arsenal of medical measures may have to be applied. Possibly vaccines and serums may give us more powerful weapons than we yet possess.

Journal de Chirurgie, Paris

March, 1921, **17**, No. 3

*Perineal Hysterectomy. B. Cunéo and G. Picot.—p. 193.
*Rectal Tumors. R. Bensaude and A. Cain.—p. 211.

Perineal Hysterectomy.—Cunéo and Picot give twelve large illustrations of the technic for removal of the uterus by the perineal route in treatment of cancer of the cervix. This technic may be preferable for obese women. The perineum is free from the deposits of fat encountered elsewhere, and the transverse incision, gently curving, 2 cm. back of the fourchet, allows ample access without injury of the anal or vulvar sphincters. The shock from perineal hysterectomy is minimal, in comparison with the abdominal route. It is a much less dangerous operation than abdominal hysterectomy, as they show by a case in which a very obese diabetic woman, with emphysema, was thus easily relieved of an advanced epithelioma. The remote results are likewise favorable; the interval since has been up to ten years in some of their cases, the patients still free from recurrence. The parametrium can be removed by this route as thoroughly as at a laparotomy, and the vagina is more readily resected. The glands cannot be removed so completely, but they add that the satisfactory results of perineal hysterectomy may have to be accepted as demonstrating that excision of the glands is of subordinate importance in operative treatment of cancer.

Rectal Tumors.—Bensaude and Cain discuss the indications, the technic and the interpretation of the findings in diagnostic examination of a scrap of tissue removed from a suspected rectal tumor. They warn that biopsy may be dangerous, and should not be attempted unless there is an actual protrusion of the wall of the rectum, as this wall is relatively thin. Also when there is much hyperemia, grave hemorrhage may follow excision of a scrap. Biopsy may be dangerous likewise if there are grave dysenteric or anaerobic infectious processes; extreme care is necessary here. Photomicrograms are given of the various microscopic findings likely to be encountered. It is possible, they remark, that biopsy in the intervals may be useful as a guide in radium treatment.

Paris Médical

March 19, 1921, **11**, No. 12

Serotherapy Aborts Typhoid. G. Étienne.—p. 225.
Physiologic Effects of Exercise. M. Boigey.—p. 231.
*Sialorrhea in Epidemic Encephalitis. E. Gelma.—p. 235.

Sialorrhea in Epidemic Encephalitis.—Gelma says that profuse salivation may be an early symptom and persist throughout the entire course of the disease. He noted it more in children than in adults.

Presse Médicale, Paris

March 16, 1921, **29**, No. 22

Perimandibular Phlegmons of Dental Origin. P. Sebileau.—p. 213.
Measurement of the Blood Pressure. A. Mougeot.—p. 216.

March 19, 1921, **29**, No. 23

Necessity for Individualization in Treatment of Bone and Joint Tuberculosis. C. Lenormant.—p. 221.
Radiologic Diagnosis of Pulmonary and Glandular Tuberculosis in Children. H. Méry, G. Détré and A. Desmoulins.—p. 221.
*Aortic Stenosis in the Young. L. Gallavardin.—p. 224.
Strophanthin and Ouabain. L. Cheinisse.—p. 226.

Aortic Stenosis.—Gallavardin describes ten cases in men between 17 and 37. The physical signs were pronounced, but there was nothing to suggest an arterial or congenital or rheumatismal origin. The defect was perfectly or fairly well tolerated.

March 23, 1921, **29**, No. 24

*Fixation of Right Colon. P. Duval and R. Grégoire.—p. 233.
Influence of Nitrous Oxid Anesthesia on the Uterus. H. Vignes and G. Moreau.—p. 234.
*Surgical Treatment of Prognathism. L. Dufourmentel.—p. 235.

Fixation of Right Colon.—Duval and Grégoire show in two illustrations their method of fastening the ascending colon by suturing it to the tissues after resection of a triangle in the posterior peritoneum. It soon becomes adherent to the denuded tissues. The transverse colon is fastened in place in the same way, only the anterior peritoneum is resected for this, and the colon is sutured to the anterior wall.

Treatment of Prognathism.—Dufourmentel has corrected prognathism preventing proper mastication in five cases in the last four years. He resected the condyles on each side, and the results were perfect. A plate was worn over the teeth for a few weeks to guide them into correct apposition. After section of the surgical neck, the condyle is easily removed and the jaw slides back to fit the upper jaw. The 3 cm. V incision in front of the upper part of the ear is above the condyle, but with retractors gives ample access, and is practically invisible.

Progrès Médical, Paris

March 5, 1921, **36**, No. 10

*Puerperal Thrombosis. R. Crémieu and P. Gauthier.—p. 101.
From Obsession to Delirium. Laignel-Lavastine.—p. 104.
Medical Responsibility. Garçon.—p. 106.
Manganates in Treatment of Tuberculosis. C. Ferry.—p. 108.

Thrombosis in the Brain from Puerperal Infection.—Syphilis, gout, lead poisoning, etc., attack the arteries but in puerperal infection the veins are the vessels usually involved. "The streptococcus loves the veins." In both the cases reported, the foci of softening in the brain seemed to be the result of a puerperal cerebral thrombosis, preceded by pelvic or femoral phlebitis. The focus of softening entailed progressive hemiplegia fifty days after delivery in the first case. It developed insidiously, without ictus, and gradually retrogressed in a few months almost completely. The heart findings were normal throughout. In the second case, facial hemiparesis with aphasia and transient mental impairment developed gradually, without ictus, the eighteenth day after delivery. By the fourth month there was much improvement.

Revue Médicale de la Suisse Romande, Geneva

February, 1921, **41**, No. 2

*Placenta Praevia. C. Thélin.—p. 65.
Early Treatment of Primary Syphilis. G. Cornaz.—p. 101.
*Anguish Neurosis. M. Christin.—p. 109.
Volvulus with Malformation of Peritoneum. Kotzareff.—p. 117.
*Fatal Hemorrhage from Cancer. H. Koechlin.—p. 124.

Placenta Praevia.—Thélin reiterates that fever is an absolute contraindication to cesarean section. When the woman has bled a great deal at the beginning of labor, it is important to spare her further hemorrhage, and cesarean section is called for, unless the tissues are elastic and dilatation far advanced. "With total placenta praevia, operate; with partial, refrain." With the death of the fetus there is less reason for operating.

Anguish Neurosis.—Christin refers to the condition in neurasthenics in which the innervation of the viscera has been upset by some mental or emotional stress. Ambition, duty or pride may be the pathogenic factor, but in the majority of cases some disturbance in the sexual life is the cause, not necessarily abstention. It is a synthesis of sensations from various organs, accompanied by worry and dread. Treatment must bear in mind that the whole is primarily a disturbance in the visceral nervous system, of psychic origin, and that it develops in paroxysms with the worry and dread persisting in the intervals.

Fatal Hemorrhage from Cancer.—Koechlin describes six cases in which fatal hemorrhage occurred from the stomach, bowel or uterus; in some it was the first manifestation of the malignant disease.

Schweizerische medizinische Wochenschrift, Basel

March 3, 1921, **51**, No. 9

Production of Cells in Adult Organism. H. K. Corning.—p. 193.
*Photographic Test for Bromids in Blood Serum. F. Merke.—p. 200.
*Thread Test for Gastric Ulcer and Cancer. G. G. Moppert.—p. 202.

Photographic Test for Bromids in Blood Serum.—Merke recalls that in developing photographs the presence of bromids retards the process. The blood serum of epileptics taking bromids responds differently to the action of light. The test is so sensitive that positive findings are obtained even with the cerebrospinal fluid.

Thread Test for Gastric Ulcer and Cancer.—Moppert's conclusions from study of the Einhorn thread method in forty-four men and fifty-four women are that no reliance can be placed on the findings. The distance from the teeth to the pylorus may vary by 20 or even 30 cm. in different persons, and even at different times in the same person. The method may affirm the presence of an ulceration when there really is none, or it may deny the existence of a cancer when malignant disease really exists. In certain cases of vagotonia without ulceration, the findings were as pronounced as in any ulcer case, the blood stain on the thread pointing to a lesion in the esophagus, stomach or duodenum. In fifty-six normal persons, the thread showed the stain in 41 per cent.; in twenty-two cases of gastric ulcer the thread was blood stained only in 36 per cent., and in none of the four cases of duodenal ulcer.

March 17, 1921, **51**, No. 11

*Climate and Pathologic Metabolism. A. Oswald.—p. 243.
*Poliomyelitis Suggesting Acute Appendicitis. J. Dubs.—p. 248.
Bacteria of Paratyphoid Group. Tsakalotos.—p. 250.
Cesarean Section with Twins in Case of Grave Valvular Defect; Recovery. A. Sträuli.—p. 252.

Climate as Adjuvant in Treatment of Pathologic Metabolism.—Oswald remarks that obesity, diabetes, gout, etc., have always ranked as diseases of nutrition and excretion, but we have learned that certain organs must be mainly incriminated for them. Weakened functioning of the nervous elements reduces the total of the nerve impulses that sustain the chemical activity of the tissues. Hence the latter slow up and the tissues suffer. The deranged metabolism here is secondary to the impaired nervous system, especially the vegetative system. A general quickening of the chemical processes in the cells acts indirectly on the general metabolism, and through this on the organs primarily involved. The mountains and the seashore are potent aids in this line.

Poliomyelitis with Onset Suggesting Acute Appendicitis.—Dubs reports three cases in which the symptoms of acute appendicitis proved to be the forerunner of epidemic poliomyelitis in a young woman and two boys. Oehmig has reported a similar set of symptoms in a case which later was demonstrated to be epidemic encephalitis. Leukopenia, hyperesthesia in various parts of the body, sweating and headache should suggest caution in accepting the diagnosis of appendicitis.

Chirurgia degli Organi di Movimento, Bologna

February, 1921, **5**, No. 1

*Arthrotomy of the Knee. V. Putti.—p. 1.
*Treatment of Flexor Retraction of Knee. V. Putti.—p. **11.**
*Post-Traumatic Spondylitis. A. Rossi.—p. 17.
*Paralysis of the Shoulder. D. Maragliano.—p. 32.
Amputation Above the Malleoli. R. Minervini.—p. **43.**
Development of Tendons. G. Faldino.—p. 51.
*Operative Treatment of Twisted Foot. L. De Gaetano.—p. 97.
Coracoclavicular Articulation; Three Cases. F. Frassetto.—p. 116.

Arthrotomy of the Knee.—Putti gives nine illustrations of the technic he has used in twenty-five cases of ankylosis of the knee, and in four of a tuberculous process. After a horse-shoe incision with a supplementary perpendicular axial incision, the triangular flaps turned back expose the tendon of the quadriceps which is cut in a long Z. This allows the lengthening of the tendon after the patella flap has been turned back and the joint inspected.

Treatment of Bent Knee.—Putti ascribes this deformity to retraction of the popliteal capsule of the knee, and gives illustrations of his method of capsulotomy. Six of the patients were children and two were adults. In all, the normal play of the joint was restored.

Traumatic Spondylitis.—Rossi states that the spondylitis had developed at the exact seat of the trauma in five of his eight cases; in one it was nearby, and in one it was at some distance. He explains it as chronic ankylosing rheumatism of the vertebrae, occurring in the predisposed at the point of lesser resistance created by the trauma. Treatment on this basis included radiotherapy to relieve the pains, especially when these followed the course of the nerves involved, included in or irritated by the osteophytes. Also phototherapy and prolonged galvanic treatment, the positive pole on the lumbar region. Kinesitherapy aided in restoring the movability of the spine. In the eight cases described, the pain was completely or nearly completely cured but the functioning of the spine was merely more or less improved.

Paralysis of the Shoulder.—Maragliano has found signs of injury of nerves in all his cases of obstetric paralysis of the shoulder. The trauma is generally accompanied with injury of the bone or joint, sometimes even fracture of the clavicle. He says it is never too late in the obstetric cases to improve conditions by simple immobilization in hypercorrection. In a case described the girl of 16 had never had the functional use of the arm. After six weeks of abducting and outward rotation, the forearm flexed and the hand and fingers extended, almost normal functioning was realized. With paralysis of the shoulder from poliomyelitis, the arm should be immobilized in abduction and outward rotation, without delay after the attack. It favors restoration of function in muscle fibers still capable of recuperation. When the muscles are hopelessly atrophied, he drives in a long peg of bone taken from the tibia.

Operative Treatment of Twisted Foot.—Gaetano's illustrated descriptions of eight cases show the fine results that can be realized in advanced forms of twisted feet, congenital and paralytic, by wedge resection and plastic procedures.

Policlinico, Rome

March 14, 1921, **28**, No. 11

Reflex Mechanism of Cerebellum Region. C. Minerbi.—p. **359.**
*Calculus in the Urethra. S. Bivona.—p. 365.
Abortive Treatment of Syphilis. E. Vecchia.—p. 366.

Analgesia to Aid in Expulsion of Calculus in the Urethra.—Bivona had hematuria for a few days, then kidney colic for three hours. The calculus responsible for this then passed into the bladder and urethra. As he was remote from a surgical center he injected into the urethra a 4 per cent. solution of cocain. When the bladder was distended he squeezed together the meatus, and then with a sudden violent strain to urinate he released the meatus, and the calculus was swept out in the jet of urine. The cocain had obviated all tendency to spasm, so that the calculus slipped readily along.

Riforma Medica, Naples

Feb. 26, 1921, **37**, No. 9

Electrocardiography as Aid in Diagnosis. D. Pace.—p. 194.
Behavior of Leukocytes in Immunity Reactions. G. Tiscornia.—p. 196.
*Syphilitic Chancres on the Hand. Gaviati.—p. 197.
*Foot Sign in Organic Paralysis. P. Boveri.—p. **198.**
*Treatment of Vesico-Uterovaginal Fistula. F. Nicolieff.—p. **199.**
*Occupational Amyotrophy. V. Giordano.—p. 202.
Dermatosis from Arsphenamin. R. Rummo.—p. 205.
The Blood in Jaundice. E. Aievoli.—p. 206.

Chancres on the Hand.—Three primary chancres on the right hand were the aftermath of a fist fight.

Foot Sign of Paralysis.—The patient lies prone, the thighs horizontal, the legs flexed at a right angle on the thighs, and the feet at a right angle to the legs. In the normal, irritation of the sole on the median line causes the toes to be drawn together and retracted. With injury of the cortical motor zone, there is extension of the foot on the leg or dorsal flexion of the foot, while the foot is rotated inward, with adduction. The movement of the foot in this abnormal response to irritation of the sole occurs by jerks, so Boveri calls this the jerk-foot sign of organic paralysis. It cannot be elicited unless the subject is in this Z position.

Vesico-Uterovaginal Fistula.—The opening was so large that to avoid traction on the suture the prevesical portion of the ureters had to be dug out of the cicatricial tissue. The suture was horizontal instead of vertical. The transperitoneal operation through a median laparotomy in the case illustrated was simple and a complete success, without reaction on the part of the peritoneum.

Occupational Amyotrophy.—Giordano ascribes the progressive amyotrophy to the special handwork done by the young man in a munitions factory. The bones of the hands also showed pronounced atrophy.

Tumori, Rome

Aug. 31, 1920, **7**, No. 3

*Cystic Neuroglia of Pineal Gland. A. Businco.—p. 173.
*Large Sarcoma in Middle Ear. G. Bilancioni.—p. 200.
*Surgical Bone and Joint Disease. A. Borzini.—p. 215.
*Syringoma of Eyelid. L. Martinotti.—p. 242.

Cystic Neuroglioma of Pineal Gland.—Businco says that the case described is the fourth to be published. He cites literature and gives photomicrographs of the growth. It was found at necropsy of a woman who had died from pneumonia, and there did not seem to have been any pathologic influence or special symptoms from the tumor except those from mechanical compression.

Sarcoma in Middle Ear.—The sarcoma had evidently originated in the tympanic cavity but had grown out behind the ear until it covered nearly half of the lower side of the head, as can be seen in the illustrations. The boy of 5 did not survive the extensive operation. The growth was deemed inoperable from the first, but the family insisted upon "something being done," and it was partially resected.

Bone and Joint Disease.—Borzini refers to solitary cysts in the bones and to the proliferation of the fatty processes of the synovial membrane, describing an instructive example of each. Treatment can be only surgical, and he describes the clinical picture and the indications and technic, comparing them with the literature.

Syringoma of Eyelid.—Martinotti's study of this subject is based on ten cases of these small, multiple adenomas of the sweat glands, all in the eyelids. Several of the cases are illustrated.

Brazil Medico, Rio de Janeiro

Feb. 26, 1921, **35**, No. 9

The Flagellate Polytomella Agilis. H. De Beaurepaire Aragão.—p. 107.
Testimony in Local Medicolegal Case. Leonidio Filho.—p. 107.

March 5, 1921, **35**, No. 10

Some Brazilian Species of Cyclocoelidae. L. Travassos.—p. **121.**

Crónica Médica, Lima

January, 1921, **38**, No. 691

*Endemic Goiter. C. Monge.—p. 3.
*Simplification of Ambard's Formula. M. A. Velasquez.—p. **11.**
*Gastric and Duodenal Ulcer. E. Delgado G.—p. 15.
Productive and Perceptive Cerebration. C. Jakob.—p. 17.

Endemic Goiter.—Monge gives some illustrations showing the unusually large size of the goiters encountered in the Urubamba district of Peru. He investigated in detail fifty of the hundred cases he records, and comments on the frequent tendency to the exophthalmic goiter type. About 2 per

cent. of the inhabitants were cretins in certain districts, and a cretinoid condition was still more common.

Simplification of Ambard's Formula.—A chart is used portraying five graduated scales, representing the urea in the urine; the urea in the blood; the output of urine and the weight. The fifth scale shows the Ambard coefficient. By drawing cross lines between the figures in the scales corresponding to the individual case, the Ambard coefficient can be computed automatically. This chart was first published in the *Paris médical*, May 15, 1920, p. 409.

Gastric and Duodenal Ulcer.—Delgado warns against resection when the organ is adherent, and prefers resection of the ulcer to extensive gastrectomy for gastric ulcer. For duodenal ulcer he advocates vertical gastro-enterostomy, with or without exclusion of the pylorus.

February, 1921, **38**, No. 692

*Pathologic Conditions in Right Abdomen. E. Odriozola.—p. 33.
Sugar in Treatment of Tuberculosis. A. Corvetto.—p. 39.
The Public, Waist-High Cuspidor. E. Escomel.—p. 42.
Ferrán's Theory of Tuberculosis. M. Arias Schreiber.—p. 46. Cont'd.

Pathologic Conditions in Right Abdomen.—Odriozola analyzes the clinical picture of what he calls dextritis, referring to an area no larger than the palm of one's hand, lying to the right of the umbilicus. A number of pathologic conditions may be responsible for disturbances here, as he describes.

Revista Española de Medicina y Cirugía, Barcelona

January, 1921, **4**, No. 31

*Cholecystitis. E. Ribas Ribas.—p. 1.
*Dysmenorrhea of Appendicular Origin. A. Cortés Lladó.—p. 13.
Treatment of Parkinsonian Sequelae of Epidemic Encephalitis. B. Rodriguez Arias.—p. 16.

Cholecystitis.—Ribas gives illustrations of several of his fifty-three operative gallbladder cases in the last two years. With bile duct complications he urges the necessity for keeping posted on the functioning of the liver, so that the operation may come in time before the mechanical jaundice from inflammation or gallstones becomes supplemented with functional jaundice from derangement of the liver. This derangement becomes chronic unless the infected gallbladder is removed in time. The pain with cholecystitis depends on the inflammation, and there may be a septicemic form of acute cholecystitis, and an edematous form with chronic cholecystitis. He reiterates that no one should die from gallstone disease. It is the internists' task to discover it and send the patients to the surgeon before it is too late, while the lesions are still restricted to the gallbladder.

Dysmenorrhea of Appendicular Origin.—Cortés recalls that chronic appendicitis has many forms of camouflage but that none is more deceptive than that with dysmenorrhea. Physicians when consulted on account of dysmenorrhea seldom think of examining the appendix. There is no vomiting with ordinary dysmenorrhea, or it is only of food, but with chronic appendicitis there is often bilious vomiting or a low persisting fever, or slight fever only during the menses. If this slight fever is accompanied with polymorphonucleosis, the assumption of chronic appendicitis is better justified. The Lanz point is more instructive than McBurney's point with dysmenorrhea, as the cecum and appendix are more liable to be found very low in the cases with genital complications. A history of preceding appendix disturbances is suggestive. In some cases described, the exacerbations of otherwise latent chronic appendicitis preceded the menses four or five times during the year, and all disturbances, appendiceal and dysmenorrheic, disappeared permanently after appendicectomy. In one girl the onset of puberty was marked with symptoms of acute appendicitis. Then the symptoms all shifted to the other side, and then menstruation became installed. The most convincing argument of the appendicitic origin of dysmenorrhea is its complete disappearance after appendicectomy.

Semana Médica, Buenos Aires

Feb. 17, 1921, **28**, No. 7

*Actinomycosis of Lower Jaw. J. M. Jorge.—p. 185.
*Purulent Interlobar Pleurisy. J. J. Vitón and A. Martín.—p. 192.
Mineral Waters. A. D'Alessandro.—p. 195.
Present Status of Pulmonary Tuberculosis. P. Galatoire.—p. 198.
Ferrán's Vaccine Treatment in Purpura. A. Milano.—p. 207.
Plasmogenesis. A. L. Herrera.—p. 208.

Actinomycosis of Lower Jaw.—Jorge was obliged to resect part of the lower jaw of the young man as the actinomycotic process resembled a sarcomatous process. It had been a year in developing, and trismus and numerous pustules had preceded the severe neuralgia of the face which compelled intervention. The long defect in the jaw was filled with a rubber prosthesis modeled from the excised portion, and it seems to answer the purpose perfectly.

Artificial Pneumothorax for Purulent Interlobar Pleurisy.—Vitón and Martin have witnessed disastrous results from surgical treatment of pleurisy with an opening into the bronchus. Hence they applied only artificial pneumothorax in a recent case in a man of 33, with most favorable results. A second patient was a woman of 60, and the outcome was equally favorable although suspension of the pneumothorax led to aggravation of the condition, but a complete cure followed further insufflations. The third patient had his sputum reduced from 420 c.c. to zero in fifty days while his general health returned to normal. It is important to keep the pneumothorax up well, and begin with large amounts of the gas, but this method cannot be applied unless there is an opening into a bronchus to allow the escape of the secretions.

Siglo Médico, Madrid

Feb. 5, 1921, **68**, No. 3504

Treatment of Whooping Cough. B. Hernández Briz.—p. 120.
Endobronchial Medication. T. Martín Carrasco.—p. 121.
*Functional Tests of Liver. F. García Guijarro.—p. 124. Conc'n.

Feb. 12, 1921, **68**, No. 3505

Pathologic Anatomy of Skin Cancer. J. L. Carrera.—p. 141. Conc'n in No. 3507, p. 193.
The Anamnesis in the Diagnosis and Prognosis of Pulmonary Tuberculosis. Ramón Villegas.—p. 145.
Laryngectomy. Tapia.—p. 148. Conc'n.

Functional Tests of the Liver.—García Guijarro reports research which has confirmed that the alimentary tests of liver functioning are not very reliable, on account of the complexity of the intermediary metabolism. He regards the amount of fibrinogen in the blood as a fairly reliable index of the functional capacity of the liver, as also determination of the bile salts and pigments in the blood, urine and stools. The lipase in the blood is an unreliable indicator of the sufficiency of the liver cells.

Feb. 19, 1921, **68**, No. 3506

*Atypical Nephritic Retinitis. Marín Amat.—p. 165.
Diagnosis of Pulmonary Tuberculosis. Ramon Villegas.—p. 173. Cont'n.

Nephritic Retinitis.—Marín Amat reports a case of apparent incipient detachment of the retina in the left eye of a previously healthy woman of 42. The next day the retina showed the white spots of albuminuric retinitis, and on a strict milk diet all the symptoms promptly subsided. The case emphasizes anew that pathologic conditions in the interior of the eye merely reflect what is going on elsewhere in the body.

Feb. 26, 1921, **68**, No. 3507

*Blood Carriers of Bacteria. E. Escomel.—p. 189. Conc'n in No. 3508, p. 217.
Epidemic Encephalitis and Meningitis. E. Pizarro.—p. 191.

Blood Germ Carriers.—Escomel's ideas on healthy carriers of bacteria in the blood, have already been summarized in these columns, vol. 75, p. 1601. These carriers do not suffer from their bacteria until some physical or emotional stress lowers the resistance. Examination of the blood before an operation, revealing this hemoparasitism, might ward off serious danger at times. The hemoparasitism may also prove dangerous by transmission of the micro-organisms to others by biting insects or in the urine.

Gann, Tokyo

February, 1921, **15**, No. 1. Paging refers to German summaries

*Experimental Sarcoma. K. Yamagiwa, S. Suzuki and K. Murayama.—p. 1.
*Experimental Adenoma. M. Ishibashi and S. Ohtani.—p. 2.
*Primary Liver Cancer. S. Matsui.—p. 4.

Experimental Sarcoma.—Yamagiwa and his co-workers report success in inducing the production of a fibromyxosarcoma in the lacteal gland region of a rabbit by means of irritation with tar. This was the only instance in 200 animals treated in the two years since they began their research in

this line, aiming to produce epithelial cancer by this means. The case recalls the sarcoma developing in a transplanted mouse carcinoma (Ehrlich-Apolant), and in a fibro-adenoma after injection of sudan III (Umehara). Their case differs from these, however, in that the sarcoma developed primarily at the point where the physical-chemical irritation from the tar had been repeatedly applied.

Artificial Production of Adenoma in Rabbit Stomach.—Ishibashi and Ohtani injected into the submucosa of the rabbit stomach and bowel at various points 0.5 c.c. of coal tar. In the bowel merely scanty hyperplasia resulted, but in the stomach there was production of an actual papillary adenoma. The proliferation was evident in two weeks and the tumor was well developed by the fiftieth day.

Liver Cancer.—Matsui describes some special histologic findings in a case of primary cancer in the liver, and emphasizes the resemblance between hepatoma and malignant syncytioma, from both the morphology and metastasis standpoints.

Archiv für Verdauungs-Krankheiten, Berlin

1921, **27**, No. 3

*Occult Blood in the Stools. E. Adler.—p. 153.
*Treatment of Sequelae of Dysentery. A. Ohly.—p. 191.
*Sarcina in the Stomach. F. Heissen.—p. 218.

Occult Blood in the Stools.—Adler has been applying the various tests for this purpose simultaneously to 500 different specimens of stools, a total of 3,000 examinations. His conclusions are that the Gregersen modification of the benzidin test deserves wide application on account of its simplicity and its extreme reliability. The 0.5 per cent. benzidin solution is made with 0.025 gm. benzidin and 0.1 gm. barium peroxid in 5 c.c. of 50 per cent. acetic acid. Two or four drops of this solution are dropped on the thin layer of the stool on a slide, and the rapidity with which the greenish-blue tint develops is an index of the amount of blood present. His tests of Snapper's spectroscope method confirm that this is the most reliable of all methods yet devised, but is too complicated for the practitioner. By using distilled water, there is no necessity to refrain from chlorophyl food beforehand. With negative findings, hematoporphyrin should be sought for, as it is possible that all the blood pigment may have been changed to this substance, so that it escapes other methods of investigation. The test for hematoporphyrin is particularly useful in distinguishing occult blood from hemorrhoid blood. The porphyrin is found by adding a little ether with hydrochloric acid to the acetic acid-ether extract.

Sequelae of Dysentery.—Ohly warns that the dysentery during the war seems to have frequently left a chronic disease of the large intestine, and special treatment is required for this, both dietetic and medical, with hydrotherapy. He has found a 10 per cent. ichthyol salve or 2 per cent. silver salt salve particularly useful for local treatment, followed by astringents. The clinical pictures vary from ulcerative to simple catarrhal enteritis, with or without participation of the stomach and small intestine.

Sarcina in the Stomach.—Heissen recalls that sarcina is found almost exclusively with dilatation of the stomach from benign stenosis of the pylorus. There is some ferment in cancerous gastric juice which destroys sarcina; hence the discovery of sarcina in a dubious case speaks in favor of a benign affection. Or if malignant disease is present, the tumor has not yet ulcerated, which is also favorable for the prognosis. With scirrhous cancer, there is comparatively little tendency to ulceration, but this type of cancer is generally accompanied by rapid evacuation of the stomach, and hence the sarcina does not develop. In a recent case of hard ulcer with palpable tumor and sarcina, he diagnosed benign stenosis although cancer seemed probable, and the operation confirmed his deductions.

Deutsches Archiv für klinische Medizin, Leipzig

Feb. 22, 1921, **135**, No. 3-4

Bone Marrow Findings in Chloroleukemia. H. Eichhorst.—p. 129.
*Resorption from Pleural Effusion. R. Cobet and G. Ganter.—p. 146.
*Calcium Metabolism in Tetany. C. J. J. G. Klein.—p. 161.
*Edema. II. K. Beckmann.—p. 173.
*Cancer of the Trachea. E. Fraenkel.—p. 184.
Leukocytosis Under Epinephrin Treatment. G. Walterhöfer.—p. 208.
*Purin Metabolism. S. J. Thannhauser and G. Czoniczer.—p. 224.
The Pulse Pressure with Arteriosclerosis. A. Lukacs.—p. 240.

Resorption of Iodin from Pleural Effusions.—Cobet and Ganter injected sodium iodid into the pleural effusion and examined the urine for iodin afterward. The condition of the pleura itself was found the decisive factor.

Calcium Metabolism in Tetany.—Klein reports a case of tetany developing with a tendency to myxedema seven weeks after a goiter operation. As calcium was given and retained, the tetany subsided; the retention of calcium increased under parathyroid and thyroid treatment. The greatest retention followed daily doses of 3 gm. of calcium lactate. The patient was a girl of 18 previously healthy except for the goiter.

Edema.—Beckmann found that as a salt-poor diet reduced the salt content of the blood, this was followed by the salt and water in the edema pouring into the blood. A milk diet with cardiac edema acts also in this way. The effect of venesection never lasted for more than two days. Digitalis increased the salt content of the blood, the salt passing from the edema fluid into the blood. Diuretics acted diversely according to the single large dose or repeated small doses.

Cancer of the Trachea.—Fraenkel has compiled about eighty cases of cancer of the trachea and has had opportunity to study ten cases himself. There are no pathognomonic symptoms beyond the rapid cachexia, the hoarseness and sudden attacks of suffocation. The average duration is less than a year. In his cases metastasis was extreme in six, not only in the glands around but in adjoining and remote internal organs, but removal of the trachea in certain cases allowed survival for several years. When the first symptoms develop the process is usually far advanced.

Deranged Purin Metabolism.—Thannhauser and Czoniczer reiterate that no disease is known which is due to a pathologic course of the nuclein metabolism. Primary constitutional gout is the result of a constitutional functional inferiority of the kidneys for excretion of uric acid. The accumulation of sodium urate in the blood and tissues may in time injure the kidneys further. Secondary gout develops in consequence of a diffuse chronic kidney disease, rendering the kidney incapable of eliminating uric acid.

Deutsche medizinische Wochenschrift, Berlin

Jan. 6, 1921, **47**, No. 1

Means to Offset the Falling Birth Rate. A. Grotjahn.—p. 1.
*Spread of Tuberculosis in Germany. B. Möllers.—p. 2.
Mortality and Morbidity Rate of Tuberculosis. H. Selter.—p. 4.
*Technic of Oxydase Reaction. F. Schlenner.—p. 6.
*Artificial Pneumothorax in Pleuritis. K. Henius.—p. 7.
Experiments with Partial Antigens. W. Unverricht.—p. 8.
*Treatment of Varicose Veins. Klapp.—p. 9.
Quinidin Treatment of Arrhythmia. Benjamin and von Kapff.—p. 10.
The Blood Platelet Problem. R. Degkwitz.—p. 12.
Arsphenamin Dosage. L. Hauck.—p. 13.
Bacterial Flora of Wounds. W. J. Klug.—p. 14.
Blood Picture with Gastric Cancer. Helmreich.—p. 15.
Modifications in Technic of Roentgenotherapy. Groedel.—p. 16.
Automatic Regulation of Roentgen-Ray Tubes. H. T. Schreus.—p. 17.
Spirochaeta Pallida in Cervix Uteri in Primary Syphilis. G. Gellhorn and H. Ehrenfest.—p. 18.
Treatment of Ulcus Cruris. H. Deutsch.—p. 18.
*Neurasthenia. M. Reichardt.—p. 19.
Suppurative Inflammation of the Cornea. Steindorff.—p. 21.

Tuberculosis in Germany Since the War.—Möllers reports that with the second half of the year 1919 the mortality from tuberculosis in Germany has been slowly decreasing.

Technic of the Oxydase Reaction.—Schlenner says that the oxydase reaction permits differentiation between marrow and lymph blood cells. The best and most rapid method of examining the blood for it is by treating an unfixed specimen with alpha-naphthol and dimethylparaphenylendiamin in fuchsin or "borax-methylene blue."

Artificial Pneumothorax in Treatment of Pleural Disease.—Henius reports two cases in which artificial pneumothorax was successfully used to prevent formation of adhesions and to relieve the severe pain in pleuritis sicca and pleuropericarditis.

Treatment of Varicose Veins.—Klapp ligates the veins through the skin at numerous points, the leg raised to expel the blood. This necessitates outlining the course of the veins

beforehand. The unthreaded needle is passed through beneath the vein, the plane of the curve of the needle perpendicular to the surface of the limb. Then the needle is threaded and is drawn back. The unthreaded needle is then inserted again at the same point but is passed this time above the vein, the plane of its curve parallel to the surface of the limb. The tip emerges at the same needle hole as at first; it is threaded with the other end of the catgut and drawn back. The ends are then tied, thus ligating the vein. As the wrinkled skin at the point is smoothed out, the knot slips back into the needle hole. From forty to fifty ligatures are usually sufficient. The saphenous vein is ligated at the start.

The Present-Day Conceptions of Neurasthenia.—Reichardt distinguishes three types: (1) pure exogenous nervous exhaustion of the brain; (2) endogenous and constitutional nervousness, and (3) endogenous nervousness from internal causes. Group 1 is caused by long continued, excessive mental exertion, combined with emotional stress, inappropriate mental work and unhygienic mode of living, or in consequence of cerebral poisoning, as after typhoid, influenza and chronic alcoholism. The occasion of the neurasthenic condition must have been of such a character that it would be actually capable of overfatiguing or exhausting a healthy brain with average resistance. On removal of the cause, the neurasthenic condition disappears in a short time. Endogenous and constitutional nervousness constitutes the major portion of the cases of neurasthenia as described in the textbooks. Differentiation between Groups 1 and 2 is not always feasible. Group 3 comprises cases of endogenous nervousness due to internal causes, without any recognizable external cause. It may suddenly appear at any time while the patient is apparently in perfect health, and may continue for years.

Münchener medizinische Wochenschrift, Munich

Dec. 24, 1920, **67**, No. 52

Recidivation in Disease. H. Oeller.—p. 1487.
Technic for Parabiosis. G. Schmidt.—p. 1491.
*Osteomyelitis with Periosteal Abscess. F. Rost.—p. 1492.
Specific Treatment of Influenza. K. Bayer.—p. 1493.
Sterilization of Female Experimental Animals by Parenteral Administration of Spermatozoa. R. Dittler.—p. 1495.
Smallpox in Man, and Foot-and-Mouth Disease. A. Groth.—p. 1497.
Gastro-Intestinal Disease and War Diet. Strauch.—p. 1502.
Local and Conduction Anesthesia. K. Vogeler.—p. 1505.
Treatment of Tuberculosis with Partial Antigens. Deycke and Altstaedt.—p. 1507.

Osteomyelitis with Periosteal Abscess.—Rost reports that in 226 cases of acute osteomyelitis with periosteal abscess, not only the number of deaths but also the number of complications were much less in the cases treated only by incision of the abscess than in the cases in which the bone was opened up.

Wiener klinische Wochenschrift, Vienna

Dec. 2, 1920, **33**, No. 49

Stereoscopic Effect in Ordinary Roentgenoscopy. Holzknecht.—p. 1061.
Treatment of Undescended Testicles. A. Brenner.—p. 1062.
Bilateral Sarcoma of the Testes. H. Kaiser.—p. 1066.
Oligodynamic Distant Effect of Mercuric Chlorid Solution. Weltmann.—p. 1068.
Direct Reenforcing of the Self-Protecting Power of Tissue Cells. A. Teilhaber.—p. 1071.

Zentralblatt für Chirurgie, Leipzig

Nov. 27, 1920, **47**, No. 48

*Trophic Ulcers Following Division of Nerves. F. Brüning.—p. 1433.
*Local Anesthesia and Erysipelas.—p. 1435.
Treatment of Volvulus of Sigmoid Flexure. A. Neudörfer.—p. 1437.

Trophic Ulcers Following Nerve Section.—Brüning asks, How is the curative effect of nerve suture on torpid ulcers to be explained? Leriche regards disturbance in the sympathetic innervation as the cause of trophic ulcers following nerve injuries; such ulcers healed after periarterial sympathectomy, removal of the neuroma and restoration of the continuity of the nerve. On the basis of two successful cases Brüning thinks that not the sympathectomy, as performed by Leriche, was the essential factor for the radical cure of the old trophic ulcers, but rather the resection of the neuroma and scar tissue, and the restoration of nerve continuity.

Local Anesthesia in Treatment of Erysipelas.—Gelinsky refers to the efforts to check the progress of erysipelas by forming a wall of anesthetic wheals at the edge of the infected area. He warns that the visibly inflamed area does not coincide with the extent of the infectious process. The streptococcus advances farther than the inflammation of the skin would indicate, and the wall of anesthetic should be placed beyond its farthest invasion.

Zentralblatt für Gynäkologie, Leipzig

Dec. 11, 1920, **44**, No. 50

The Capillaries in Eclampsia and Pregnancy. Nevermann.—p. 1425.
Technic of Lumbar Anesthesia. H. H. Schmid.—p. 1427.
Severe Hemorrhage from Vaginal Varices. Riedinger.—p. 1428.
"Roentgenotherapy in Adnexitis." H. Eymer.—p. 1433.
Protection of the Perineum in Childbirth. E. Haim.—p. 1433.
Technic for Introduction of Tube Speculum. E. Sachs.—p. 1434.

Zentralblatt für innere Medizin, Leipzig

Nov. 20, 1920, **41**, No. 47

*Artificial Pneumothorax in Echinococcus Cyst in Lung. H. Alexander.—p. 801.

Artificial Pneumothorax in Echinococcus Disease of Lung.—Alexander states that artificial pneumothorax with an echinococcus cyst of the lung, without certain connection with a bronchus, is contraindicated on account of the danger of rupture of the cyst into the pleural cavity. If there is a definite connection with a bronchus, pneumothorax may be undertaken, but marked increase of tension should be avoided. Pneumothorax may prepare the way for a radical operation. After the operation, continuation of the pneumothorax is valuable in order to bring about a more rapid reduction of the wound cavity.

Nov. 27, 1920, **41**, No. 48

Determination of Total Blood Volume. J. Löwy.—p. 818.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Feb. 19, 1921, **1**, No. 8

Case of Rat Bite Fever at Amsterdam. De Lange and Wolff.—p. 938.
Changes in Tissues After Subcutaneous Injection of Paraffin. C. van Gelderen.—p. 946.
*Electrical Responses with Fragilitas Ossium. G. C. Bolten.—p. 952.

Osteopsathyrosis.—In the four cases of fragilitas ossium reported by Bolten, besides the abnormal fragility of the bones and the blue sclerotics, roentgenoscopy showed that the long bones were deficient in calcium, and there was in all a peculiar, excessive response to electric tests, as well as a large number of vasomotor and trophic disturbances. The response to electric tests recalls the response in thymectomized dogs, which suggests the possibility of thymus insufficiency as a factor in fragilitas ossium. Other features point to insufficiency likewise of the parathyroids, and thyroid—the whole a trophoneurosis of endocrine origin, affecting predominantly the calcium content of the bones.

Finska Läkaresällskapets Handlingar, Helsingfors

January-February, 1921, **63**, No. 1-2

*Susceptibility of the Sexes to Disease. R. Ehrström.—p. 1.
Utilization of Butter and Margarin in Intestinal Tract. R. Lundgren, H. Perander and T. Putkonen.—p. 16.
Cyst of Duct of Steno. T. Sandelin.—p. 27.
Fasting from Standpoint of Physiology. C. Tigerstedt.—p. 33.
Chronic Pneumonia in Boy. B. Sourander.—p. 45.
First Cataract Operation in Finland, 1771. G. A. Nordman, p. 50.

The Sex as Factor in Pathogenesis of Disease.—Ehrström has compiled statistics which show the preponderance of certain diseases in one or the other sex, and discusses the causes for the lesser resistance in one sex. Gout heads the list with 40 men to 1 woman affected; color blindness, 10 to 1; Thomsen's and Leber's diseases, 10 and 8 to 1; chloroma, 3 to 1; diabetes, bronchial asthma, paralysis agitans, and hereditary nystagmus, each 2 to 1. In contrast to this, vasomotor neuroses are found in 20 women to 1 man; exophthalmic goiter, 15 to 1; osteomalacia, 10 to 1; arthritis deformans, 6 to 1; myxedema, 5 to 1; gallstones and sclerodermia, 3 to 1; endemic goiter and chorea, each, 2 to 1. These are pathologic conditions in which endogenous factors participate, and the predilection for a certain sex suggests that the sexual organs and sexual characters are involved in their mechanism. It demonstrates further, he adds, that the influence of the secondary sex characters is more profound and far-reaching than has been realized hitherto.